The Iron Ag

A Review of the Hardware and Metal Trades.

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A. Field & Sons' Centennial Exhibit.

We show in the accompanying illustration the very tasteful and beautiful exhibit of Messrs. A. Field & Sons in the Main Building of the Centennial Exhibition. Tacks and nails are not in themselves attractive or beautiful, but in this instance they are so shown as to be a source of great pleasure and satisfaction to thousands who, under ordinary circumstances, would pass a case of tacks without notice. The firm occupy a space of about 22x6 feet, on which they have erected the handsome structure shown in our illustration, composed of glass cases resting on nests of drawers, and surrounded by a rosewood railing. In the center of this structure, and resting on the cases, is an elaborately carved picture frame about 18 feet long and proportionately high, showing on one side an excellent painting of their works. On the opposite side of this picture is a display that is as beautiful as it is unique. On a large canvas is a picture of the American eagle with flags, shield, &c., surrounded by stars in brass tacks.
All the lettering on this card and all the ornamental scrolls, of which there are several, are done with tacks of different kinds and colors. To give some idea of this piece of work, we copy the lettering, which is as follows: "A. Field & Sons, Taunton, Mass., manufacturers of copper and iron tacks, carpet, brush and gimp tacks, tinned tacks; lining and saddle nails, tufting nails and buttons, shoe nails; patent coated tacks in colors, red, green, blue, drab, brown and maroon, glaziers' points;" and in handsome scrolls, "Japanned lining nails, common and patent brads, annealed trunk and closet nails, hob and Hungarian naits." The lettering on this card is handsome, and the display type is well balanced. The immense variety of tacks, &c., used is worthy of notice.

Tastefully arranged in many colored paper boxes in the surrounding glass cases are samples of over 2000 varieties of tacks and nails, Japanned, self-color, blued, galvanized, tinned, brass, copper, &c. This house was established in 1827, and the daily capacity of their works is over 50,000,000 pieces.

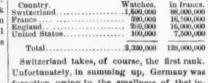
The length of the Palliser shell for the 81 ton gun will be 44 inches, and it will weigh with the gas check at its base a little more than 1700 pounds-a few pounds over three-quarters of a ton. Of this total weight the empty shell absorbs 1656 pounds, and the bursting charge of powder will be something like 30 pounds; the gas check and plug will make up the rest. No fuse is required to ignite the bursting charge in these shells. The heat generated by concussion is sufficient to fire the powder, and the missile having passed through the impotent armor enters the ship a bursting mine. In size and weight, the sharpnel and the common shell will correspond in the main with the Palliser, but the Polliser alone is able to attack armor clads. The effeet of such a shell burst ing between decks can scarcely be exaggerated. It is believed that the famons battle between the Alabama and Kearsarge in the American war was practically accomplished by a single shell, and that a mere toy compared to the 1700 pounder. An important improvement has of late been introduced into the manufacture of shells, an improvement which has been making slow head-way, and of which little has been heard, even in the scientific branch of the service. Increased charges of gunpowder and the use of the gas check have had the natural result of adding to the sudden pressure exerted by the shock of dis-

charge upon the base of the projectile, which has, in consequence, displayed | ascertained that, for the sake of economy, a plan | with the proof projectiles of the 81 ton gun. the base of the shot, receiving first the propulof casting shells true in form and size, so as to the base of the shot, receiving first the propul- of casting shells true in form and size, so as to sive force, manifests a disposition to overtake avoid the necessity of turning them down in a the production of the great boits which the 81 its head, and expands to such a degree that if lathe; and that, beside attaining the desired ob- ton gun is to hurl at the targets on the sands the gun did not happen to be stronger than the ject, the fact of keeping their original skins had of Shoeburyness, shot the gun would burst. As it is, the effects given to the shells so treated a large percentage are only the scoring of the studs and grooves. But there is a manifest danger, as well as inshaven fellows. The plan has been tried on a

convenience, in this habit of the projectile, and large scale with the small guns, such as the production of pocket watches in the different dustry. There was, however, a manufactory employing about 450 hands. the superintendent sought for a remedy. He field artillery. It has been tried on a small scale

Watch Manufacture.

countries is as follows:



Unfortunately, in summing up, Germany was adelphia. According to the Paris Revue Industriel the forgotten, owing to the smallness of that in-

Saxony, whose sales amounted to 50,000 thalers (about 175,000 francs) in 1871, and employed from 300 to 400 hands. The Swiss watch industry is divided among the Cantons as fol-

lows:			
Cantons, Neuchatel Berne Wallis Geneva	500,000	Men employed, 11,881 10,392 2429 2,330	Women employ'd. 5.381 4,243 1,813 1,288
Total	1,600,000	25,242	19.727

14,135 in Berne; 3150 in Wallis; and 3618 in Geneva. Total number of men and women employed in those four Cantons, 37,967. The value of these 1,600,000 watches amounts to some 88,000,000 of francs (five francs to the dollar), which gives 55 francs as the average for each watch. The half and full chronometers are included in the above numbers.

An English View of American Manufactures.

Mr. Douglas Galton writes to the London

The marked decline in the British export trade, as shown in the recent returns of the Board of Trade-a decline especially noticeable in the exports to the United States-induces me to offer a few remarks upon the development of manufacturing industry in that country, which I had a favorable opportunity of observ ing during my recent visit to the Centennial Exhibition, at Philadelphia, as one of the judges in the group for railway appliances. I last visited the United States in 1856. The progress made in the interval of 20 years is very marked. The stimulus afforded by the demands and expenditure on account of the war, assisted by the protective system which has been adopted, have developed and nursed every variety of manufacture, from iron rails to Parisian fancy articles. The advocates of the protective policy say it should be called nationalism, not protection. Without discussing the wisdom of the protective policy, or how far it has been instrumental in aggravating the present stagnation of trade, it is certain that it has led to the erection of a large number of factories, and of numerous fron and steel works, and to a rapid development of manufacturing industry, as evidenced by the great increase in late years of the amount of coal raised. Thus, while the total amount of coal raised in the United States in 1870 was about 32,000,000 tons, as compared with 113,000,000 raised in Great Britain, the coal raised in the United States in 1874 was 50,000,000 tons, as compared with 125,000,000 raised in Great Britain. Of the coel thus raised in 1874 only about 500,000 tons were exported from the United States, of which about 400,000 tons were exported to the Dominion of Canada. The coal fields of the

United States cover an area of 196,000 miles; the coal is, in most cases, easily accessible; iron ore is abundant, both near the coal fields and elsewhere.

The development which the manufacturers of the United States have attained, and the energy with which they work, make it man fest that not only can we no longer expect to obtain a market for our manufactured goods in the United States. but that we must be prepared to find that manufacturers of that country are competing with us in every market to which we and they have access for all our principal manufactures, such as iron, cotton goods, &c. It is most important that England should thoroughly appreciate its true position in this matter. The Centennial affords an excellent opportuni-

ty for seeing the process of American industry, and for meeting the leading manufacturers, as well as the most prominent men of all classes in the United States. I would, therefore, strongly urge all Englishmen who can afford the time, especially those interested in the Switzerland takes, of course, the first rank. political aspects of this question, to visit Phil-

The Springfield (Ill.) Iron Company are now

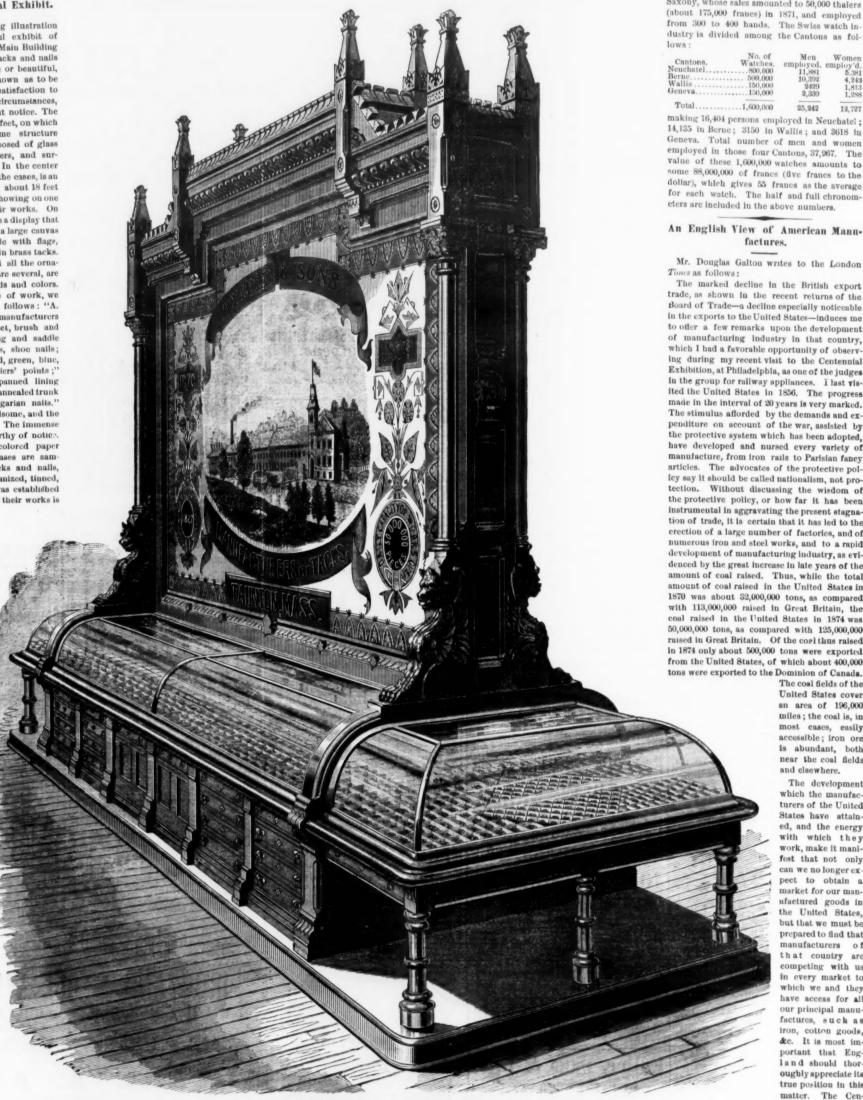


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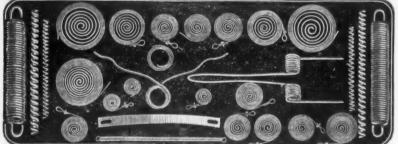
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Merchant Iron at the Centennial.

One of the exhibits of iron of which we have reason to be proud, both in its quality and the method of display, is that of BROWN & CO.

of Pittsburgh, makers of the "U. S." brand so celebrated for its purity, toughness and strength. The exhibit is designed not only to display samples of this brand, but also to illustrate the various stages of its manufacture from the ore up to the finished bar and plate. The exhibit may be classified as follows (1) Ore; (2) pig iron, cold blast charcoal; (3) rough blooms; (4) finished blooms; (5) "U.S." bar iron; (6) "U.S." boiler plate. Two of the finished blooms are polished, looking as though nickel-plated, showing the cleanness of the ron. Another has also been polished, and after polishing, been doubled over cold until the two xtremities touch. The background of the exhibit is filled in by upright "U. S." bars. varying from 1/2 inch to 3 inches round and square, polished clean and bright as silver. Between these bars are placed two pieces of 31/4 inch round iron, with screw threads cut in them 1/4 inch deep, and punched at the ends with a 31/4 inch punch, bent cold so as to form the letters "U. 8." 4 feet high. The remainder of the exhibit is composed of illustrative tests, to which the iron in plates and bars can be subjected without fracture. Sheets are flanged, bent, twisted and drawn out hot and cold into almost every conceivable shape, a series of practical tests wonderfully trying upon the strength and fiber of the iron, and all apparently without the slightest fracture. Indeed, the tests which this iron is capable of enduring are emarkable. The following tests of 1/4 inch They were tested oiler plate will show this. by C. A. Uber, U. S. N., Inspector Louisiana Bridge, on one of Riehle Bros.' machines

> No. 1 broke at 68,000 lbs. per sq. in. 76,000

another time No. 1 broke at 83,000 lbs. per sq. in.; No. 2 broke at 73,500 lbs. per sq. in. Another single specimen at 76,000 also. "10" with upset heads, tested by C. A. Uber, Louisiana Bridge, and C. S. Dutton, St. Louis Bridge, on St. Louis hydraulic machine: No. 1, sect. area, '7843 inch, broke at 71,421 per square inch; ruptured area, 5153 inch. No. 2, sect. area, 7885 inch, broke at 69,783 per square inch; ruptured area, '4901 inch. But as remarkable as is the strength, the purity is even more so, as the following analysis will show, the impurities in the plate being in all only '29 of 1 per

ANALYSIS OF UNITED STATES BRAND IRON BY PROF. GEORGE HAY, ANALYTICAL LABORATORY, ALLEGHENY CITY.

	Plate.	Bar.
Iron	99.421	99:710
Combined carbon	.383	.096
Graphitic carbon	trace	minute trace
Silicon	*082	.032
Sulphur	minute trace	'001
Phosphorus	.068	.011
Manganese	.039	.069
Aluminum	minute trace	minute trace
Copper	.003	'003
Minute traces of other		
matter, loss, etc	-019	'018

B. & Co. of the merits of their iron that they have entered it in the "free to all" class, claiming that it is unsurpassed in all qualities that go to make up a first-class iron, viz., cleanness, purity, toughness and strength for either tensile or lateral strains. The boiler plate is stamped 65,000 lbs., and, as the tests will show, can be flanged either with or against the grain, hot or cold. They also claim for it an exceptional ability to resist repeated heating and cooling without granulation. Owning the ore lands and making the pig iron themselves they are enabled to rely upon the quality of their stock, and, working it in the same manner the year through, they are enabled to maintain that great essential, uniformity of quality. This fact they make a strong point of in their Centennial circular. They also state that the claiming that it is unsurpassed in all qualities Centennial circular. They also state that the sample plates and bars "were taken from stock, and fairly represent the everyday production of our mill.' THE RIVERSIDE IRON WORKS

Wheeling, West Va., exhibit at T 64, Main Building, some very superior cut nails in kegs, above which, as an exception to the general rule, they have placards, not only inviting visit-

ors to touch the samples but to take them away with them. The shape, finish and symmetry of these nails are worthy of all praise, and show that the reputation of Wheeling nails is cerainly well earned by one of its manufacturers at least. This company have 126 nail machines, and made the largest product in 1875 ever made by a nail works in the country. In addition to their nails they show some specimens of bars in small pieces twisted and broken, so as to show quality, which is far from being the worst there is in the Exhibition.

THE PHILADELPHIA IRON AND STEEL CO. exhibit the different sizes of bar, angle, T and channel iron, fish plates and bolts, I beams, tc. In this exhibit there are samples of a very deep and light channel iron for window purses that is worthy of notice. It has often en declared that it was impossible to roll such ron, but the success of this company in its

nanufacture disproves this, LEWIS, OLIVER & PHILLIPS, One of the most interesting facts in connec on with the part and future development of the iron trade in this country is the manufac ture by machinery of many forms of hardware formerly made exclusively by hand in the shop of the blacksmith, as well as the use of iron for many purposes for which other maerials have generally been used. As examples of the former class we may mention the large line of wagon hardware, and of the latter the

use of small rounds bent in various shapes for ence pickets. In the application of machinery to the manufacture of this class of hardware, no firm has done more than that of Lewis, Oliver & Phillips, of Pittsburgh, whose display is at T 64, Main Building. The product of one of their rolling mills, which are among the largest in Pittsburgh, is used by themselves in the manufacture of these goods. The variety of styles and classes is so great that they have teen able to make a very attractive and beautiful display. The background is nearly all occupied by three large panels, inclosed in fuely carved walnut frames, in black and French walnut, the center panel being surmounted by a carving of a cluster of bolts, lunges, etc. On these panels are arranged a sample line of their wagon and heavy hardware, comprising in wagon hardware the following specialties, of which they are the patcentees and exclusive makers: Wagon box strap bolts, box rods, single tree irons, bolster plates, brake ratchets, hammer straps, rubirons, stay chain hooks, single and doubt tree clips, pole caps, and single tree hooks; also axie tree clips, clevises, tire rivets and burrs, box staples, kieg bolts, rivets, double tree tengue neckyoke and coupling plates, wagon chains and skein bolts. In heavy hardware: Carriage, tire, stove, clevator and machine bolts, coach and lag screws, bolt ends, wedges, crowbars, nuts, washers, harrow teeth, screw, hook and strap, screw hook and eye and strap and T hinges, screw hitching rings, &c. They also exhibit various sizes merchant iron, which they make of very superior quanty and finish, all sizes being rolled to exact gauges. They make all sizes rounds and squares up to 4½ inches in diameter, and flat from ½ to 10 inches in width, paving particular attention to rolling odd and difficuit shapes of iron. Their bolts are made on Lewis patent bolt machines, photographs of which are exhibited, including bolt header, screw cutter, nut tapper and bott pointer. These machines are unexcelled for verietz and constity and are in use. no firm has done more than that of Lewis, Oliver & Phillips, of Pittsburgh, whose disbolt header, screw cutter, but tapper and bolt pointer. These machines are unexcelled for variety and capacity, and are in use in almost all the large car shops in the country. THE SLIGO IRON MILLS.

Combined carbon trace (983 minute trace) (984 minute trace) (983 minute trace) (983 minute trace) (984 minute trace) (985 minut Located at T 67, in the Main Building, is the so that when united the places form a hollow sphere 2½ feet in diameter. Again, pieces from 10 to 12 inches square, varying from one-quarter to three-eighths inch thick, taken at random from trimmings at the mill, have been punched through the center with a 2 inch punch, the holes flanged out to 6 or 7 inches diameter by 2 or 3 inches high, showing no breaking or laminating, while the appearance of the edge of the flange itself shows that no hammering or filing has been done on it. Then strips are chiseled out from the four sides and drawn out hot into wires about three-sixteenths inch thick. These when cold are polished brightly, drawn back together at the diagonal corners of the plate, tied into close knots and the ends flui-hed by being bent into letters S. All of these flanged plates bear the official certificate of the boiler inspector of Allegheny county, Pa., as to their

> both cold and hot, but also the wonderful purity, toughness, tenacity, malleability and ductifity of Sigo fron. They also exhibit some samples of their Tyrone or common fron, including muck bar 14 inches wide, bars, angle, plow beam, hand side fron and light rails. The entire exhibit is inclosed by a beautiful fence, made entirely of polished bars of Silgo fron from half to 1 inch diameter, each railing having a knot tied in the middle, while over the entrance is sprung an arch made of polished bars knotted cold.
>
> (To be continued.) (To be continued.)

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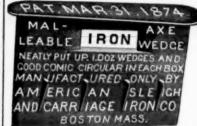
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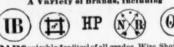
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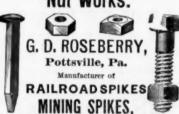
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trees of SPOKES, AXE, PICK, SLEDGE, HAMMER, HATCHET and other

New Patents.

We take from the records of the Patent Office certain patents, lately issued, which will be found interesting :

IMPROVEMENT IN PUDDLING FURNACES. Specification forming part of Letters Patent No. 174,573, dated March 7, 1876, issued to William M. Raynolds and David Thomas, of St. Louis, Mo.

The drawing represents a central vertical ection of the furnace.

air blast are enabled to be kept open.

Referring to the annexed drawing, A reprechamber-that is, a chamber wherein two different balls can be puddled at the same time : and for this purpose the furnace is made com- pipes ff, boxes G G, pipes I I I, &c. one of the puddling operations can be carried perforations K K, &c., and doors D D, &c. on, and at a immediately beyond the place a, and in the direction of the chimney C, for the other puddling operation. D D represent doors LI, &c., chambers JJ, &c., perforations KK, and doors DD, &c. arranged respectively on each side of the fur-The furnace walls are built in the usual K K, &c.

where. This enables the fron to be puddled at such a degree of heat as to cause the removal from the product of objectionable ingreat Washington the following specifications of dients which hitherto have remained in ordi- George's Terrace, Queensgate, London, and flame is thrown back into the furnace, and, in intended for use upon a lawn or ornamental In use, the perforations in the furnace walls, through which the blast enters from the pipes | three steps, covers nearly the whole area; the of the fire upon the walls, and from the colsection of the furnace.

In such a verandah, and the whole is surmounted by a condition the doors are opened, and by the lofty receding curved ornamental zinc roof. the puddling chamber of the furnace. It also insertion of a suitable tool the closed aperhas reference to the heating, regulation and in- tures are punctured and reopened. The lower troduction of the hot air blast; to the shape of the neck of the furnace; to the mode of constructing the water boxes, and to the provision By using two boxes entirely independent of whereby the openings for the entrance of the air blast are enabled to be kept open.

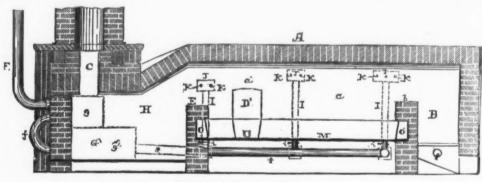
each other, no trouble arises from the expansion and contraction of the material composing ameter. While as a piece of workmanship this the boxes, which difficulty exists when a single sents the improved furnace, B represents the fire place, and a a' represent a double puddling ployed. To increase the fire, the blast is turned into the ash-pit

Claim.-1. The furnice A, chamber a a',

4. The furnace A, chamber a a, and pipes nace, and respectively opposite the places a and I I, &c., chambers J J, &c., and perforations

metal. The contribution is an ornamental pavilion in cast and wrought iron, manufactured from a design by Thomas Jeckyli, Esq., of 5 St. nary puddled iron. By reason of the shape formerly of Norwich. The pavilion, which is of the wall at the neck of the furnace, the 35 feet long, 18 feet wide and 35 feet high, is consequence, the heat is further economized. grounds. It is Japanese in its style. It has two floors; the lower, approached by two or II, &c., are apt to be closed from the action upper, not so long tor so wide, is supported upon 28 light square iron columns, and has a verandah, and the whole is surmounted by a The details of the pavilion are worthy of the minutest inspection. The railing round the and is divided into 72 panels, in each of which is an exquisitely fashioned sunflower with ameter. While as a piece of workmanship this particular portion is unrivaled it does not strike as as being quite as good as some others.

The columns which support the next floor, nd which are about two or three feet within this railing, are most elaborately ornamented; and all are connected by a transom bar 7 feet 6 Inches from the ground. Secured to these col umps are numerous brackets which support the verandah. In these brackets we have extraordinary beautiful specimens of the work that can be produced in iron. Every bracket has the same outline, but no two of them have their spandrels enriched in the same manner. On either side of each 18 a complete picture in cast iron, given with a sharpness, accuracy and



IMPROVED PUDDLING FURNACE

form, saving at the rear end E, near the neck | 5. A puddling furnace having its rear end | fidelity, and at the same time a knowledge of of the furnace, the walls, instead of being contracted gradually toward the neck, are carried ing angles. a uniform distance apart until opposite the neck, and then, in such a direction as to form reentering angles, they are carried to the furnace neck. F represents an air blast pipe, which, coming from any suitable direction, is forked into two branches before entering the furnace. These branch pipes are respectively carried into heating boxes G G, which are located at the bottom of the chimney C, and at the end of the

The boxes G G are made double, g g', to obtain a larger amount of heating surface, but any suitable form will answer. From the heating boxes the branch pipes along either side of the furnace, as shown at f, are conducted toward the forward end of the furnace, and to a point just beyond the bridge wall b, where the two branches are preferably united. One of the branches f is then carried out through the furnace wall, and thence along the same until opposite the ash pit, where it is taken into the furnace again, so as to open into the ash pit beneath the fire-place B. III represent additional branch pipes leading upward from the branches and arranged as follows: Three on either side of the furnace, and opposite, or thereabout, the following points: the forward end of the chamber a a'; the rear end of the chamber a a', and a point midway between the first two named. The pipes I I, &c., are carried up within the walls, to the upper part of the furnace, and respectively into chambers J J, &c., arranged in the furnace walls. The latter are perforated, as shown at K K. &c, opposite the chambers J J, &c., to enable the blast to enter the furnace. All of the pipes I I, &c., are provided with cut-off valves ii, &c., and that part of the branch f which enters the ash pit is also furnished with a cut-off operated by a lever. The main branch pipes are contained in the furnace walls until they pass the nd they are then carried e bridge, a the furnace bottom M. O O represent two similar water boxes arranged upon the furnace floor. They are independent of each other, and are suitably supplied with water.

The operation of the invention is as follows: The puddling chamber is charged in the two places a and a', and the furnace is fired in the ordinary way. By reason, however, of the proportions of the furnace and the relative arrangement of the places a and a' and the fire, the heat is concentrated and economized, and the desired result is produced with a smaller onsumption of fuel than has hitherto been used. The process is further cheapened by the improved method of using the hot air blast, and which also enables a better quality of from to be produced. By means of the branch pipes II, &c., the blast can be admitted, as desired, to any part of the furnace, combustion can be made more complete, and the degree of heat can be suitably modified. In this way the furnace is brought under perfect control, and, by reason of this, not only the right degree of heat can be maintained, but the furnace, if desired, can be heated differently at different points. A further important advantage accrues from this control: hitherto it has been impracticable to always heat a puddling furnace to the highest degree desirable, for the reason that in so doing a portion of the iron in one part of the furnace might be overheated. With the present dangering the contents of the furnace else in the in the iron casting or in act work in factory in every respect.

wall E, constructed so as to form the re-enter-6. The combination of the furnace A, pipes

&c., and valves i i, &c. We take the following abstract of new

DIE STOCK.

To Charles E. Billings, Hartford, Conn., and John E. Price, Thompsonville, Conn.-July 11.-1. The hinged levers E E', arranged in a groove



in the die stock, for holding and releasing the

2. The hinged levers E E', in combination with the screw G, for securing the dies in the stock.

The pin F, in combination with the levers E E', for releasing the dies. BAIL EAR FOR PAILS-REISSUED.

To Jonathan Walton, Brooklyn, N. Y .- Patent No. 77,853, dated May 12, 1868; antedated April 30, 1868,—July 11.

1. As a new article of manufacture, a bail ear for pails made of wire bent to form a loop, and having two prongs that are clinched substantially as set forth.

2. The combination of the staple with the 3. A bail ear made of wire, and having an

eye for the bail between the two prongs. 179,658.—Apparatus for Removing Tin from by Electricity.- N. 8. Keith, Seran Brooklyn, N. Y .- July 11.

79,698.—Combination Union for Wrought Iron July 11.

179,701.—Petroleum Cooking Stove.—Fredrick Hildebrandt, New York, N. Y.—July 11. 179,776.—Store.—Rudolf Eickemeyer, Yonkers,

N. Y.-July 11. 179,815,—Pipe Joint.—Andrew O'Nell, Balti-more, Md.—July 11. 178,81€. - Pipe Tongs. - Joseph Passeno, George-

town, D. C -July 11. The retreating griping surface at the end of the jaw is for smaller sizes of pipes, the inner griping surfaces for the larger.

179,677 .- Screw Cutting Die Chuck,-John G. Born and Geo. J. Born, Pittsburgh, Pa .-July 11.

The following design, bearing date July 11, 1876, was duly patented in the United States Patent Office :

9386,-Cylinder for Revolvers,-William A.

Fine Art Castings at Philadelphia.

Barnards, of Norwich, England, at the Cen- way in which the material has been handled by improvement a very high degree of heat can be tennial, is one that should be carefully and the smith, as well as the excellence of the desafely maintained at any point without enthoughtfully studied by all who are interested, signs. The whole exhibit is exceedingly satis-

the capabilities of the material that excites the greatest admiration in the careful observer. Some of these subjects the skillful iron molder II, &c., chambers J J, &c., perforations K K, has reproduced in metal in a manner that calls to mind, at the first sight, carved wood. These subjects are both highly artistic and complex; patents, recently issued, from the official for instance, there are studies from the "apple blossom with flying birds," "whitethorn with pheasants," "Scotch fir with jays," "sun flower," "chrysanthemum, narcissus, daisy and grass, with a crane and rising lark," &c. These ornamental brackets further support the gutter and cresting of the lower roof. The cresting forms a wavy line, which is surmounted at intervals by fans richly carved, baving for their subjects studies from the "rose, honeysuckle, chrysanthemum, hydrangia," &c. Between each column beneath the transom bar is a richly carved pendentive ornament forming an arch. Above the transom bar, and between it and the gutter, are richly carved, open-work, key-pattern panels, in which are innumerable medallions of various designs, being studies from "butterflies, bees, birds, fish," with many quaint and geometrical patterns. The balcony railing, 4 feet high, is of light and severe design, showing how much grace can be produced by mere straight lines when properly arranged. The pendent ornamentation to this balcony is like lacework in design, and without any apparent stiffness in execution. The upper roof is supported by 20 columns of a similar design to the lower ones. These are connected by a transom bar, above which is a rich open-work fish-scale panel supporting the upper gutter, with cresting and fans of a like character to the lower ones. The brackets, however, upon these columns are of a different outline to those below, and the spandrels are filled with many designs of a bolder character. Between each bracket, both upper and lower, is a richly orna mented ceiling of a combined floral and geometrical pattern, the chrysanthemum being taken as the type for its or is covered with zine in curved tiles, and is surmounted by an elaborately carved cresting. Pipes .- Benj. R. Hagar, Antwerp, N. Y .- The ceiling to the upper and lower compartments is composed of cast fron panels in bas-

> The Committee of the South Kensington Museum have purchased duplicate portions of the pavilion, as specimens of English art in iron work.

The pavilion contains one leaf of a pair of wrought iron park gates made for the late Sir Anthony de Rothschild : a candle stand, and a very ornamental flower stand, the foliated parts of which are studies from the hily, both are of wrought fron, and belong to Sir F. G. M. Boileau, Bart. ; two other flower stands of wrought iron gilt; an ornamental wrought iron bracket to hold a candle, the design and workmanship of which is particularly light and graceful; an iron repousse tazza; two lengths of a wrought irou fence or railing, supplied to the government of the Argentine Republic, and erected Hulbert, Brooklyn, assignor to Merwin, by them in Buenos Ayres; some specimens of Hulbert & Co., New York, N. Y. Applica-foliage copied from nature in wrought iron, tion filed June 27, 1876. Term of patent, 14 | which are extremely faithfully rendered; and a large assortment of cast brass and iron grates, the workmanship of which will bear the strictest examination. A few specimens of wrought fron in the shape of brackets are exhibited. The exhibit of Messrs. Barnard, Bishop & These are worthy of all praise for the admirable

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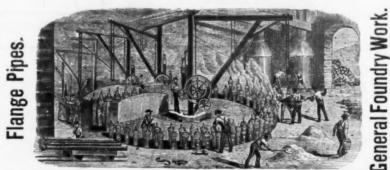
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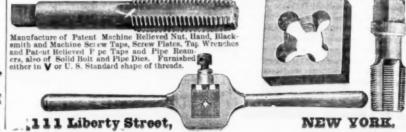
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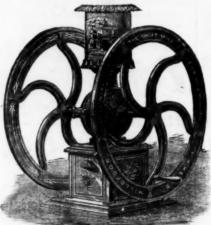
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Proceedings have been commenced against said Imhæuser & Co., for selling clocks contrary to the core of the Court, and especially the clock with a series of springs in the cover, and marked "Patented ct. 30th, 1874." All persons discovered using these infringing clocks will be dealt with according to law.

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BY L. SIMONIN.

The history of burning-mirrors of brass is known. At Rome the sacred fire was lighted with apparatus of this kind, and Archimedes fired the ships which were blockading Syracuse by concentrating upon them the sun's rays by means of a large reflector. Buffon repeated successfully the experiments of Archimedes. With a mirror of very slight curvature, consisting of a number of pieces of looking glass, he set fire, at some distance, to fir and beech planks, melted tin and silver, and brought iron to a forty minutes of exposure to the sun. Inasmuch red heat. Saussure later accumulated by means of superimposed inclosures of glass the sun's heat up to a temperature exceeding that of boiling water, and Sir John Herschel repeated these experiments at the Cape of Good Hope at various times between 1834 and 1838. At the same period the French physicist Pouillet was engaged at Paris in measuring the calorific intensity of solar radiation, arriving at the conclusion that the heat emitted from the sun and poured down upon the earth in one year would suffice to melt a sheet of 1ce thirty neters thick, and enveloping the entire globe. About the year 1860, M. Mouchot, then Pro

essor of Mathematics in the Lycee of Alencon, being stimulated by the researches of Pouillet, as well as by those of Melloni, the ablest of Italian physicists, who has made experiments of incomparable precision upon the transmission of heat, boldly attacked the question of the utilization of the sun's heat. The mechanical equivalent of heat had at length been determined. Thanks to Melloui, we already knew the quantity of caloric which different bodies, as glass, when reduced to thin laminæ, suffer to pass through, as also the difference in the reflecting power of polished metallic surfaces, according to the nature of the metals employed. But to measure the amount of vis viva transmitted daily from the sun to the arth, and, more Utopian still, to concentrate at little cost the sun's rays so as to realize all solar heat falling on the roofs of Philadelphia the effects of which they are capable, were objects the attainment of which was henceforth insured, though Buffon and Saussure had failed, strated that upon one square mile, using only owing to the insufficiency of the data at their command. The question is now merely a matter of calculation-an application of well known

physical laws. In order to concentrate to any useful purpose the sun's rays, there was need of a receiver which should be of moderate size and reason able cost. After sundry attempts, one of which was with an apparatus resembling that of Saussure, Mouchot contrived a vertical boiler of copper, blackened on the outside, covered with three concentric bell-glasses, and resting on some bad conductor of heat, as sand, brick, or wood. Soon he increased the power of his apparatus by the addition of a metallic reflector, which enabled him to dispense with two of the three bell-glasses. With this apparatus he considerably raised the temperature of the water in the boiler, reduced it to vapor, melted sulphur, the liquefaction temperature of which is 116° C., and after twenty minutes of nsolation brought the empty boiler up to the temperature of 200° C.

With this reflector a few seconds suffice to set on fire a heap of shavings or a piece of board. In a glass vessel placed at the focus of the reflector and inclosed in another vessel of great as its dynamic power is considerable." glass, one kilogramme of tin has been melted in two minutes; the same quantity of lead wealth and a long experience, will, doubtless, took five minutes, and of zinc, six. The fusionpoint of these three metals is 235°, 335°, and 475° C. respectively. With spherical or parabolic mirrors, whose focus is a point, and not a line, as in the conical or cylindrical mirrors employed in the foregoing experiments, the con centration of solar heat would have been still

While engaged in these investigations the ingenious experimenter brought out his Marmite Solaire, a cylindrical glass vessel, in which is placed another cylinder of copper or of wrought iron blackened on the outside, and resting on the bottom of the glass receiver. The whole is covered with a glass lid. A cylindrical reflector of silver directs the sun's rays upon the apparatus. With this marmite it takes less than four hours to prepare an excellent pot-aufeu, consisting of one kilogramme of beef and a quantity of vegetables, the whole being perfact of the heat being applied with great regularity.

In this form of marmite, now superseded by simple glass vessel fixed at the focus of a conical mirror of silver-plated brass, fruits, potatoes, all sorts of legumes, meats and grains are cooked by solar heat. So, too, an infusion of tea or coffee can be readily prepared, and for this purpose we may employ one of those bottles of colored glass in which Lyons beer is put up. To cook legumes or grains rapidly, a different course may be taken. A closed vessel containing water is set in the focus of the reflector, and when the liquid begins to boil a tube with the bottom of another containing the legumes or grains, which are quickly cooked by the steam.

disk of wrought iron is placed beneath the

amount of heat as does the vaporization of an Orders for fall trade should be made early. Manufactured only in this city. Manufactured only in this city. Sand for circular and price list.

E. S. Lee & Co., Received the solar presented to the solar presented to the same, and thus give a butter must be avoided, lest the chemical rays, by transforming the butter into butyric acid, should apoll the flavor of the meat. By inter-

to be desired.

end the alembic-head is connected by a borizontal tube with a worm, the latter descending in the form of a belix and dipping into a constant current of cold water, while the metallic vessel, containing two liters of wine, is inosed in the glass cylinder and set in the focus of the reflector. The alcohol is collected after as the apparatus grows hot slowly and continuously, the alcohol is highly concentrated and esses a very agreeable aroma.

parabolic in form, i. e., cylindrical mirrors whose base-line is an open curve resembling a parabola. The reflecting power of cylindrical mirrors increases in proportion to their aper-ture, and hence the time required, for instance, to boil a liter of water is inversely as the aperture of the mirror, i. e., the greater the aperture the shorter the time. But later the inventor has employed only conical mirrors, and in these the insolation surface is quadrupled when the diameter of the mirror is doubled.

Mouchot's researches did not end here. He proposed further to obtain mechanical effects with solar heat, and in the beginning of August, 1866, he put in operation at Paris the first machine of this kind.

In the meantime Ericsson was studying these same problems, without knowing anything about Mouchot's experiments. Starting from the facts collected by Herschel and Pouillet, Ericsson, in the first place, estimated the action of the sun upon a surface of 9 square meters to be sufficient to vaporize 8 liters of water; consequently, it would be equal to 1 horse-power. From these premises he deduces striking consequences, as, for instance, that the alone would suffice to drive 5000 steam engines of 20 horse-power each. Then, having demonone-half of the surface, and devoting the remainder to buildings, roads, etc., we can drive 64,800 steam engines, each of 100 horse-power, simply by the heat radiating from the sun, he adds these remarkable words: "Archimedes, having completed his calculation of the force of a lever, said that be could move the earth: I affirm that the concentration of the heat radiated by the sun would produce a force capable of stopping the earth in its course." Again: "In England they are beginning to calculate the time when the coal will give out, though coal mines are, so to speak, of recent exploitation. A few thousands of years—drops in the ocean of time -will exhaust the coal mines of Europe unless, meanwhile, recourse is had to the aid of the sun. True, the sun's beams do not every day reach the surface of the earth; but when the great magazine is opened which shall supply heat gratuitously without cost of transportation the prudent engineer will know how to provide a reserve against cloudy days. At the same time we would observe that a large proportion of the earth's surface is illumined by an ever radiant Mr. Ericsson, who, beside genius, possesses mechanical application of solar heat. Mean-

The traveler who visits the library of Tours sees in the court vard in front a strange looking apparatus. I nagine an immense truncated cone, a mammoth lamp shade, with its concavity directed skyward. This apparatus is of copper, coated on the inside with a very thin silver leaf. On the small base of the trun cated cone rests a copper cylinder blackened on the outside, its vertical axis being identical with that of the cone. This cylinder, surrounded as it were by a great collar, terminates above in a hemispherical cap, so that it looks like an enormous thimble, and is covered with a bell-glass of the same

while we must state what has been done in this

direction by a Frenchman.

plar receiver, or, in which water is made to boil by the heat rays of upon this region, and which is growing the sun. This steam generator is designed to stronger day by day by reason of the deraise water to the boiling point and beyond, by velopements the cylinder by the silvered inner surface of the the three old mines, the Jackson. Cleveland conical reflector. The boiler receives water up and Lake Superior-that the whole of the grand to two-thirds of its capacity through a feed foundation of this region of territory is one pipe. A glass tube and a steam gauge commu- great mass of iron ore of the best quality-it nicating with the inside of the generator, and will be of more interest to the town of Marattached to the outside of the reflector, indicate quette, than any discovery that has been made both the level of the water and the pressure of since the existence of frou here was first made the steam. Finally, there is a safety valve to known. The representatives of either mine let off the steam when the pressure is greater are sensible and practical, and we shall look than is desired. Thus the engine offers all de- with interest to the solution of the question the accessories of a steam boiler.

The reflector, which is the main portion of and is 80 centimeters in hight, giving 4 shows constant improvement, and well merit lation. The interior walls are lined with burnished silver, because that metal is the best re"Herald" ranges and "Achenor" furnaces, The inclination of the walls of the apparatus to positions and conditions. equal weight of water, can be performed in the lits axis measures 45°. Even the ancients were

Industrial Applications of Solar Heat. posing a pane of green or red glass we can in- blackened on the outside, because black pos lercept the chemical rays which cause this fer- sesses the property of absorbing all the heat mentation, and then the result leaves nothing rays, just as white reflects them; and it is inclosed in a glass envelope, glass being the most By substituting for the two lids of the solar marmite an alembic-head, the apparatus can be most permeable by the rays of luminous heat. used for the purposes of distillation. To this Glass further possesses the property of resist ing the exit of these same rays after they have been transformed into dark rays on the black ened surface of the boiler. None of these ap plications of physical laws present any novelty people reduced them to practice instinctively, as it were, before men of science could assign the reasons. Here the arts of cookery and of gardening, and the processes for warming our rooms, did not wait for the experiments of the physicist. Saussure himself started from these data in his researches; but the inventor needed In all the foregoing experiments, M. Mouchot the discoveries of modern physics in order to at first used concave silver mirrors, cylindro- give to these applications a rigorous for-

> The boiler proper of the Tours solar engine onsists of two concentric bells of copper, the larger one, which alone is visible, having the same hight as the mirror, i. c., 80 centimeters, and the smaller or inner one 50 centimeters their respective diameters are 28 and 22 centime ters. The thickness of the metal is only 3 millimeters. The feed water lies between the two envelopes, forming an annular envelope three entimeters in thickness. Thus the volume of liquid is 20 liters, and the steam chamber has a capacity of 10 liters. The inner envelope is empty. Into it pass the steam pipe and the feed pipe of the boiler. To the steam pipe are attached the gauge and the safety valve. The bell glass covering the boiler is 85 centimeters high, 40 centimeters in diameter, and 5 millimeters in thickness. There is everywhere a space of 5 centimeters between its walls and those of the boiler, and this space is filled with a layer of very hot air.

> The earth, owing to its diurnal and annual evolution, does not occupy the same position with regard to the sun at all hours of the day. or in all seasons of the year. This being the ease, the generator is so contrived as to revolve 15°, or one twenty-fourth of its circumference, hourly around an axis parallel to the earth's axis, i. e., so as to follow the apparent diurnal motion of the sun, and to incline gradually on this axis in proportion to the solar declination. Hence the intensity of the utilized heat is always nearly the same, whatever the hour of the day or the season of the year, inasmuch as the apparatus is always so arranged as to reflect with the least possible loss all the rays emitted by the sun. This double motion of the generator is effected by a very simple contrivance.

> The generator just described is the one which M. Mouchot was enabled three and a helf years ago to set up at Tours, the Couseil General of Indre-et-Loire having provided the funds. It has vielded curious results, some of which are worthy of being recorded here, though before long they will be surpassed when some im provements have been made in the apparatus. On May 8, 1875, the weather being fine, 20 liters of water at 20° C. temperature was introduced into the boiler at 8:30 a. m., and took only 40 minutes to produce steam with a pressure of two atmospheres; in other words, a temperature of 121° C, was obtained, which is 21 centigrade degrees above boiling point. This steam then quickly acquired a pressure of five atmospheres. This was the safety limit of the strength of the apparatus; if the process had been carried any further the boiler would have exploded. Toward noon on the same day, with 15 liters of water in the boiler, steam at 100° C., i. e., a pressure of one atmosphere, was raised in less than 15 minutes to five atmospheres—a temperature of 153° C. Finally, on July 22d, about one hour after midday, the heat being exceptionaily great, the apparatus reduced to vapor 5 liters of water per hour, which is equal to 140 liters of steam per minute, or half a horse-

(To be continued.)

The Negaunee Herald says that an important move is being made by the Jackson and C'eveland mines conjointly. It is the sinking of a test shaft at the dividing line between the two properties, to ascertain whether the Negaunee and Ishpeming basins are separate, or only parts of a grand deposit, or body of iron ore. Should it prove what is now a settled conviction in the minds of many practical iron men This curious apparatus is nothing else but a despite the reports of the so-called geologists words, a boiler, in who have from time means of the solar rays, which are thrown upon Bessemer and Cambria, the lower workings of

Messrs. Eddy, Corse & Co., of Troy, show well filled warerooms at their foundry, which we the generator, has a diameter of 2.60 meters at lately visited. The extensive and well known its large, and 1 meter at its small base, line of "Leader" cook and heating stoves square meters of reflecting surface, or of inso- their reputation as standard. Among their flector of the heat rays; still, brass with a light Beside these, there is a varied and excellent coating of silver would also serve the purpose, general assortment of stoves adapted to all

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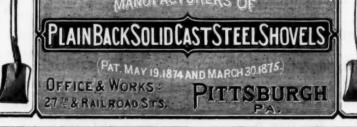
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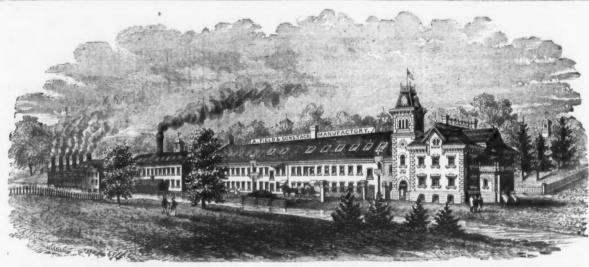
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Management of Blast Furnaces.

meant the actual practical charge of the working of a furnace, as distinguished from a general supervision of the entire business. No unfrequently the manager attends to and knows but little of the practical work, leaving that directly in charge of a man known as the founder. To this practice may be due, in part at least, the lack of improvement in the prac tical metallurgy of iron as applied to blast furnaces. The founder, as a rule, is a man of little or no education. He has spent a series of years working in various positions around : furnace, and has learned the details of furnace nanagement; as, for instance, the tapping o under and of iron, the care of forepart and tuyeres and the handling of the hot blast oven Having risen above his fellows by strict attention and close observation, he becomes sufficiently well acquainted with the physical appearances of the slag and other indications to assume charge of the working. A good founder is a mun of judgment. He knows whether the cinder being made is well fluxed or the con trary; whether the furnace is working too hol or too cold, and the usual remedies. This is bout the sum of the accomplishments of the average founder. When the ore or mixture of ores employed is constant, he answers the pur pose perhaps quite as well as a better eduated and more intelligent man.

There are, however, but comparatively few urnaces so situated that a change of ores is ather not frequently necessary or found advisable, and herein is felt the necessity of an educated and experienced manager. Experiments tried in a blast furnace are expensive unless guided by a scientific knowledge of the material used. Even then the difficulties are sufficiently great. It is next to impossible to judge of the constitution of an ore by mere observation. A chemical analysis is not only necessary, but equally so is a knowledge of the value of the constituents and the mode of so combining and fluxing them as to form fusible hot flowing cinder.

Most of the difficulties experienced in handling well constructed and properly appointed furnace are due to errors in fluxing and com bining the various ores employed. An ex perienced manager having a fair knowledge of chemistry would seem to be almost indispens able. It is strange that so costly an establish ment as a blast furnace should be trusted to the care of a man having, at the best, only a super ficial knowledge of the materials used. Under such circumstances that more or less trouble and expense should result could hardly be ex More than one furnace has bee chilled by an error in fluxing, scaffolds without number almost, and many thousands of tons of inferior iron, made at a high cost, car be traced to the same cause. While the fur-naces were all small the difficulties were not generally so serious as with higher and large furnaces. With the former the stock passed through in so short a time, compared to that required in more modern furnaces, that in case of a mistake there was an opportunity to correct it before becoming too seriously With larger furnaces the risks are much greater, and the losses incurred through ignorance in management proportion ately increased. We hear of furnaces working exceptionally well under charge of the old-time founder, but we are not informed of the week

of bad working and heavy loss before the ores

are sufficiently well known as to insure a fair

degree of success. A furrace with all its ap-purtenances is rather a costly laboratory in

which to determine the constitution of an ore The owners of blast furnaces are beginning though slowly, to appreciate the value of an educated and intelligent manager, and while the founder may be retained, yet he will be found in a subordinate position. Instead of having the sole charge of the mixture of ores and fluxes employed, his duties will be restricted to the care of the minor details of furnace work. As the benefits of intelligent manage ment become more widely known and better appreciated, then will the management of blast furnaces occupy the position it deserves. position is dignified and made worthy by the man that occupies it. When intelligence as sumes the practical management of furnaces, then only, will it rank as one of the professions. Capitalists will find it to their advantage to offer such salaries as will attract men of capacity and education to make it their profession and study. Iron making is really a profession of the highest and most difficult grade, requir ing great skill and unremitting attention. It bears not a little resemblance to the practice of medicine. In both instances unseen forces are dealt with, and both depend largely upon the aid afforded by chemistry. The doctor deals chinery; the furnace manager, with crucibles and materials almost as complex in their hidden action and relations. Both, to be successful, must be intelligent and unremitting in their attention to business. With the one failure means loss of life to his patient; to the other t means loss of dollars, and many of them, to his employer. Only in so far as human lives are deemed of greater value than dollars, is the profession of a doctor superior to that of a furnace manager. This distinction to many is as nothing, and some few, no doubt, would go so far in this view as to place the responsibility of the latter as the greater of the two.

That medicine now kolds its high professional position is due to the patient investigation and arduous study of the many sciences pertaining to it, and to which it owes its being. Before medicine could rise superior to quackery and empiricism, it was necessary that anatomy, chemistry and kindred sciences should be thoroughly understood and applied. All previous speculations must have been mere hypotheses, 1874; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1873, and 10 in 1875; the Lackawanna 10 in 1875; the Lackawann

ometimes displaying great ingenuity, and oc onally closely approximating the mmonly so extravagant and absurd as now to be the ridicule of intelligent men. So with geology. In addition to the collection of sufficient facts, an advanced acquaintance with chemistry, botany and zoology was neces sary before any of the correct inferences could be made that have now advanced geology to a cience of great importance, and have laid the oundations for still greater progress.

The leech of 200 or 300 years ago bears about the same relation to the learned and accomplished medical doctor of to-day as the present founder of blast furnaces will probably bear to the manager of the future. As use is made of the discoveries of science, and the investigations thus guided make plain what is now hidden and obscure, the manufacture of pig ron will develop into a science, and will no onger be the creature of chance and guess work that have so long made it a mystery and the subject of ridicule

The position of a furnace manager is one of reat responsibility and ever present anxiety, equiring fair average intelligence and judgent, more than ordinary application, and a enowledge of the chemistry of his materials, as well as of the chemical and mechanical operations going on in his crucible. It is not pretended that a knowledge of chemistry and ability to apply its principles is all that is required to secure uniform and successful work. We sert, however, without fear of contradiction, that such a knowledge will greatly lessen the risks of iron making, and go far toward removing the uncertainity heretofore attending the manufacture of pig iron, and elevate the prossion to the position it richly deserves.

Such a management was not of so particular mportance while the profits on pig metal were uch as to admit of wasteful extravagance and stly experiments in the mixing and fluxing of ores. Now, however, where only the closest and most economical and successful working will pay expenses, the necessity of a more ex tended and thorough knowledge is greatly felt, and we feel sure that the next decade will show decided change in the personnel of the prac tical management of blast furnaces. As the teachings of science are more and more applied to actual practice, just so fast will the making of pig metal be taken from the realms of chance and become a profession of the highest order.

The necessity for intelligent management is pecially noticed when it is desired to make only the best grades of foundry metal. The naterial must be of the best quality, for whatver the skill, it is just as impossible to make the best iron out of poor stock as to make good cloth out of shoddy material. Ordinarily when mill fron is made by a furnace aiming to run on foundry metal, it costs fully as much as the best No. 1 X, and it would thus be a osing business to make more than a very small proportion under such circumstances. When specialty is made of mill iron, lower grades of and cheaper ores are usually employed, the coal more heavily burdened, thus cheapening he product, and there is a more considerable ange in the fluxing and general management. In order, however, to run largely on the highest grades of foundry iron, the limits are narowed; and here it is that the advantage of chemistry is mainly experienced. When the ores used are constantly the same the process s somewhat simplified, but if the mixture is changed frequently the aid of chemistry is alnost absolutely necessary to insure success. We have such a vast variety of ores constantly offering, and so few in sufficient quantity, or of such quality as to be used alone, that our mixtures of ores and furnace operations are more omplex than is generally the case in England and Scotland; hence the greater necessity that furnace management should be elevated to a profession

A practical chemist alone would not answer the purpose any more than the founder de-scribed. Practical experience is equally neces-There must be a combination of the two. The knowledge and intelligence of the one, combined with the practical experience and acquaintance with details of the other, will furnish the most successful and economical management.

The Stock and Funded Debts of Four Great Coal Corporations .- The following table, says the Shenandoah Herald, shows the capital stock and funded debt of the four largest coal carrying and minus companies. Within the past few years they have greatly increased their facilities for carrying coal, and also gone into the mining business, and their indebtedness has been largely increased. A considerable portion of the increase of their stock accounts and funded debt is due to the purchase of coal lands, for which they paid large prices, but which are worth to-day, notwith human bodies with all their complex ma- withstanding the depreciation of values, every cent paid for them, and are constantly increasing in value. Whatever may be the ups and downs of the other interests in the trade, that of the landlord is always in a flourishing condition, and as rents advance is yearly getting better. The item of debts includes both stock and funded debts :

If the comparison is carried back further to 1866, the increase is still more marked, being as high as 852 per cent. for Lehigh Valley, 220 for Reading, 208 for New Jersey Central, and 138 for Lackawanna. The Reading Road has

Trial of the Improved Lightning Saw

THE ENFERGE, DON EDRO, accompanied by birector-General Goshorn, uperintendent Albert and thers, visited Machinery lall, at the Centennial, on the evening of June 28th, unong other things increased at the invitation of

Any Dealer is aware that in an ordinary Hand Saw, the front cut is the effective cut, and drawing back the saw has little effect by reason of the slant edges riding over the fibre, as the Saw is drawn back. The difference between the front cut of a Hand Saw, and the back cut, is the difference between the Lightning Saw teeth and all others; for all other saws are set one point and ride on slant edges. By setting two points of my M the same side and the next two the other, I conceal the slant between them, and operate wholly by the oustide of a nearly vertical M tooth. Standing nearly vertical the two points of she M occupy the same space as the old V tooth. One point only is cutting and the other follows in the slit behind it to cut in the same manner, in the return motion, thus doubling the cut upon the same base and space of tooth. This construction also gives the breadth and durability of nearly an inch of steel instead of a single slender scraping point, and presents the upright instead of the slant edges to the timber. Any one can in a moment test the principle by comparing the front and back cut of any V tooth Hand Saw. My new patent of March 28th, 1876, allows the saw-dust perfect clearance; the arch slightly widening to the points of teeth renders it impossible for green or resinous saw-dust to be retained, while the slightly increased breadth at base of tooth gives the durability so much advocated by parties who have round-edged files for sale. Slightly pyramidal, the outer edges are as upright as the front cut of a Hand Saw, and the back slant cut is concealed in no other Saw than mine, by setting the two points of M to cut in line instead of alternately. Thus by this new Patent I avoid all "overhang or under-cut," avoid all tearing, and to the matchless speed of the Lightning dress and set, add the durability, simplicity of sharpening, and sweet cutting so much admired. I thus adapt the Lightning teeth to universal use, in all Hand, Pruning, Buck, and Cross-Cut Saws. The concave in the centre of the

Lawson, S. S. Hoagland, and other officers of the State Board, timing.

\$1000 challenge to any responsible saw manufacturer, to match the Lightning saws in speed of cutting and ease of sharpening. This patent saw tooth has recently vindicated by U. S. Court decreeing costs and damages for infringements.

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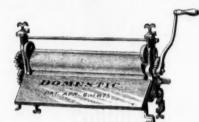
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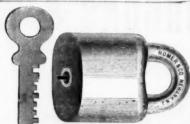
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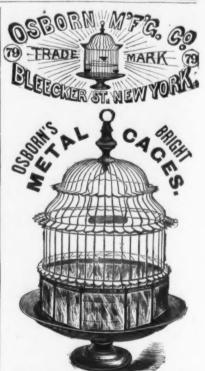
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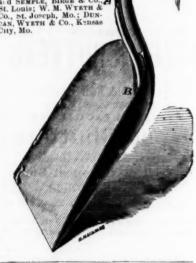
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Prof. Reuleaux on Iron and Machinery at the Centennial.

The severity and intelligence of the criticisms of Prof. Reuleaux on the German exhibit at the Centennial, invests with peculiar interest anything he may say on other departments of the Exhibition. The following from his fourth official report, which we translate from the National Zeitung, of Berlin, merits at-

It would be a grave error to undervalue foreign industry, and especially that of America, and to go as far as to suppose that the latter is uccumbing under a general paralyzation.

It is true American industry suffers from the adverse times in common with those of most other nations, but it possesses, nevertheless, great intrinsical excellence, and, even during this period of stagnation, it has acquired a vigor through perfected appliances which enables it to accomplish extraordinary things, All sorts of industries for the working and relning of metals, as well as improvements in the hardware line, and the handling of the precious and baser metals, have reached a de gree of perfection which seems to defy all difficulties, and which at all events will endeavor to assimilate whatever there may seem worthy of imitation from other nations. The manufacture of porcelain ware in all its branches is also undergoing a great development in America, and, in many respects, has reached a high degree of perfection; the same relates to textile

IRON INDUSTRY. It would be wrong, however, to suppose that from my point of view I am inclined to look ipon everything American in a rose color light; on the contrary, I wish it to be under stood, as I have stated on a previous occasion, that German iron industry of the bulkier kind excels that of the United States in its excellence, nay, I will even advance that much that tion in various ways. The Fagersta steel is in this respect we are superior to all other nations. German iron production has risen from long existing foundations, and while the times were prosperous the mental capacities of our country have allowed it to develop to great per fection; it may, therefore, sustain its position in the future. Fortunately, the German exhibit is made up from several of our prominent es tablishments, and starting on the basis of a plain but well represented exhibition of mineralogical productions, we have carned acknowl edgment in this item. The Burbach establish ment presents a great number of rolled iron supports of unusual length and hight, and in pound of iron, carbon and manganese. The this respect occupies a prominent place at the Exhibition. Krupp's acquirements in their Exhibition. Krupp's acquirements in their superiority do away with all further comment. Other iron works of ours approach him with dignity, although not in a striking manner. Excellence of quality distinguishes them all. Our greatest rival in this department is Sweden, by virtue of the ores which that country possesses of a superiority that is nowhere outdone and seldom reached. Its exhibit is tastefully arranged, and thus well noticed. But Sweden has not attained such a high state of technical dexterity, especially as regards the colossal size of pieces as we have been able to acquire. In bar and rolled iron America has not yet come

denced by the scientific tests made by Kirkaldy, accompanying the exhibits, show that the method of its manufacture possesses great advantages over ordinary Bessencer steel in its great uniformity and very superior quality. Among these exhibits are series of broken inch ingots of various degrees of hardness, with blooms forged from pieces of the same, machinery steel, square and round, from five-eighths to 5 inches diameter; crank shafts, locompanying the exhibits, show that the method of its manufacture possesses great advantages over ordinary Bessencer steel in its great uniformity and very superior quality.

Among these exhibits are series of broken inch ingots of various degrees of hardness, with blooms forged from pieces of the same, achinery, natis, spikes, springs, axles and buffers, saw blades, plates, slabs, steam boiler, gun barrels, etc., all of which show the highest degree of excellence.

The crude cast iron from which this steel was made to ordinary Bessencer steel in its great uniformity and very superior quality. bar and rolled iron America has not yet come up to our standard, although it is making great efforts in that direction, and certainly already accomplishes extraordinary things. The United States have become remarkably proficient in this branch, and among other things are applying machinery in rolling mills at points where we still use manual labor. This is the well known American principle of substituting machinery for their manual labor, still comparatively scarce. But this principle may at times be carried too far. A machine tool only accomplishes to its full extent what it is intended to perform when the operative himself posesses extreme skill and labor a high degree of organization. Thus the rail rolling mills in America which use similar tools employ proportionately more men than we do ; one and a half to twice as numerous are the operatives employed here for turning out to perfection a rail from the welding furnace as we use in prominent works. But both the men and the engineers on this side are rapidly improving. To this should be added that, viewed by Europeans, the resources in iron and coal which the Americans have at their command are be- 1 Inch Square Bars, Hammered and Rolled Cast yond all comparison marvelous, and of such easy access that the American railway system promises most assuredly a most rapid further development. The same as in some portions of England both coal and iron exist in hori-

tory within inherents care. The blass fur-rounded by fuel and ore. Without alluding to gold and silver, copper, lead and quicksilver are here in comparative abundance. AMERICAN COMPETITION.

contal deposits over colossal expanses of terri

tory within immediate reach. The blast fur-

It is impossible to foresee the competition which we Europeans shall have to encounter one day from such abundance of the raw material, and similar facilities in working it. All we can do at present is to keep our mines and works going, and make up by assiduous labor and skill that which nature denied us.

MACHINERY.

On turning away our attention from iron to the most powerful creation which it ushered into existence—machinery—we shall find that Germany has sent very little of it to the Centennal. There are, nevertheless, two good representatives—the Langen-Otto machine, driven by gas, and the Schlickeisen brick machine. Add to this the gauge manufacturers, who also contributed something acceptable, and we have pretty much exhausted the German contributions to Machinery Hall, which latter embraces also what I have designated in the forepart of this report. This general German exhibit in the branch may be termed satisfactory, and in part quite so. Our European neighbors have neither contributed much in the way of machinery. The bulk is American.

AMERICAN MACHINERY.

AMERICAN MACHINERY.

At the Paris Exhibition of 1867, and subsequently at Vienna, it already became manifest that the United States occupy a prominent rank as builders of machinery—in many respects undoubtedly the foremost. In the first

place, the Americans have known how to perfect the steam engine in certain details. They have understood how to impart to it a perfection of exterior which is simply admirable. The manner of turning out a steam engine in its various portions has also been much improved upon in America. Many firms exhibit engines of various sizes, the parts of which have been turned out automatically by machinery, and can be interchanged, as is also the case with parts of sewing machines of American and German censtriction. German ecnstruction

MACHINE TOOLS.

MACHINE TOOLS.

In the construction of machine tools the Americans are most brilliantly represented. They have, indeed, carried off the palm of superiority, not only at the Centennial, but as a general thing. Next in point of attainment, I believe, Germany ranks foremost in this branch of industry. A capacity and a deep interest in following up the technological rules are required in getting up machine tools, for which we Germans are well adapted by virtue of our national character, and this is frequently which we Germans are well adapted by virtue of our national character, and this is frequently brought to light among us. But it will re-quire our most strenuous endeavors and the utmost assiduty to come up to the advanced position which the Americans have reached.

THE PRINTING PRESSES.

Aside from the numerous American textile and wood working machinery, which both present many excellent novelties, the printing presses and accessories are challenging our admiration; thus the great manufactory of Hochas exhibited no less than 13 steam presses. Many from among these print daily papers on the spot. Let us hope that Germany, which invented the printing press, may not long remain behindhand in coming up to American perfection in this particular.

Fagersta Steel.

Among the most conspicuous of the many exhibits of iron and steel from Sweden, at the Exhibition, are those from the Fagersta Steel Werks. These are of especial interest, as they show the old theory to be a fallacy that in order to make steel the carbon must first all be removed and the metal reduced to wrought iron and afterward changed to steel by recarbonizamade by the partial decarbonization of crude cast iron containing a considerable portion of mangapese, by running the molten iron direct from the blast furnace into a Bessemer converter, where the carbon and manganese are partially removed by being burned out by the oxygen of the air used in the Bessemer process. This leaves in the metal the required amount of carbon and manganese to render it suitable for use. The practice at all Bessemer steel works in this country and England is first the removal of all the carbon and afterward to re-carbonize with spiegeleisen, which is a comsuperior quality of the Fagersta steel, as evidenced by the scientific tests made by Kirkaldy,

																					P	e	r	cent
Carbon Carbon, Silicon.	con	ıb	i	n	64	1		 								٨				 				3.46
Carbon,	gra	p	h	iŧ	ì	C.		۰		 	 			,		۰				 				1.58
Silicon.				٠				4												 				0.77
Mangan	ese.				,			 			 							,	 					4.49
Phosph	suro					,	۰			 			 							 				0.05
Mangan Phospho Sulphur										۰		۰				۰								trace

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Ultimate stress
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Extension, ultimate.... .. 10°2 per cent. 12°0 per cent.

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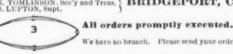
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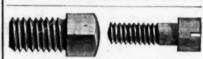
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An Encouraging Outlook.

Those who are inclined to take a hope ful view of the near future, can find in the present condition of business much on which to base the prediction that the close of the year will find us well on our way toward a complete recovery from the depression which has so long paralyzed industrial and commercial enterprise. It would seem as if the clouds were breaking in all directions, and confidence were being re-established almost as quickly as it was destroyed by the quick succession of startling events which ushered in the panic three years ago. In this market the volume of business is larger and more satisfactory than it has been in a long time. The South is again well represented among the visiting buyers, and the pur chases for the Southern market, while liberal, are, as the rule, carefully and judiciously made. The West is also order ing larger supplies than have been required to meet the demands of trade since the panic, and as there are no indications of a speculative disposition among buyers, it is reasonable to suppose that buyers have carefully estimated the nature and extent of their probable requirements. They come direct from the consumers. knowing both their wants and the extent of their ability to satisfy them. The dry goods trade, always a sensitive and usually an accurate barometer of the commercial situation, is decidedly more active than it has been at any time since the panic.

last spring broke the deadlock, as it were, and had a most beneficial effect. They were sold cheap, dealers who could not have been induced to purchase them at private sales were eager bidders in the auction room, and a movement of goods was begun which prepared the way for a more active general demand. Those who bought these goods found themselves able to handle them without loss, and are now buying more. The jobbing trade is satisfactory in volume, but the margins are very close, and the profits of the season's business will be small. This is a matter which will regulate itself in time, although in a trade in which competition is so active as in dry goods, dealers of all classes will have to content themselves with smaller profits for some years to come than they have expected and realized since 1861. In this trade the feeling seems to be that the tendencies are strongly in the direction of complete recovery, and that next year will be a good one for legitimate business of all kinds.

In the grocery business the feeling is one of confidence. More goods are demanded for consumption than the wholesale trade expected to sell, and within the past month there has been a very satisfactory activity reported. The stocks of staple and of many lines of fancy groceries are reported as growing smaller, and a steady business is expected for the remainder of the year. In the general produce markets a confident feeling is reported. The wool dealers are doing an exceptionally good business and are very cheerful. This gives promise of an increased activity in the manufacture of woolen goods, which will give employ ment to a great deal of labor now idle. The cotton market is so much controlled by speculation that its condition at any given time cannot be taken as a safe indication of the immediate future. The growing crop will probably be a good one, and while the condition of our manufacturing interest demands that the price shall be kept within well defined limits, the growers will probably find a profitable market for all they will have to sell. In the petroleum market prices have sharply advanced since July, and as production has fallen behind consumption, the advance seems to be legitimate. Most of the refiners are compelled to refuse orders, as they have contracts on hand which will keep them for dairy products are very good, and an export demand somewhat larger than the average is expected. The demand for leather has been good for some weeks, and the indications are considered fair for a steady movement during the remainder of the year. In a word, the condition of general trade in New York shows a decided mprovement as compared with last year, and the activity now reported is expected to continue until well into the winter. The conditions are all favorable to a healthy commercial movement, the country is able to take what the demands of consumption call for, and business is almost wholly free from a speculative disposition.

From nearly all parts of the country we hear the good news of increasing confidence and a better feeling. The Boston Price Current says: "Nobody can read our reports this week without feeling convinced that business is steadily reviving. Some articles still hold back, but the revival extends to most of the leading in our streets, which are fast filling up with long processions of loaded teams, and on the sidewalks, where our passage is often blocked up with huge bales and cases of merchandise. Almost every person that we meet seems animated with renewed life, and we find activity and confidence where, two months ago. were only dullness and despondency. The Philadelphia Price Current says most departments of trade, and the prosencouraging than ever. One of the best features of the times is the absence of speculation in any description of merand cheap." Of the Baltimore markets the Sun of that city says: "In all branches of commerce there are indications of a revival of business. The low prices to which nearly all kinds of merchandise have been reduced gives confidence in the maintenance of values, though the disposition manifested to carry small stocks restricts the amount of the current transactions. The same reason, however, makes business constant, as stocks will require more frequent replenishing, and dealers in dry goods and all articles of general distribu-

The large auction sales of domestic cottons | Pittsburgh, the Commercial of that city | count unearned profits. It is a good time The volume of business was better to- recovery from commercial depression. day than for some time past; and while the great staples of iron and glass are still dull and rather depressed, outside of those lines the commercial prospect seems more like justifying the hopes of improvement than for some time past." The Commercial seems to have overlooked to invite an examination of the causes the facts reported in our last issue, which show that the revival in iron and glass manufacture has already begun. From New Orleans the Price Current reports that branches of the wholesale trade are exhibiting increased activity.'

In the principal cities of the South and dise. In some lines of business prices that prices cannot go lower. are rising, or, if not rising, are so well Current of that city asserts with confidence which at one time stimulated large shipbusy for weeks to come. The prospects that "the tide of business has turned," and ments at Valparaiso, while they hamsays that confidence is being restored. pered the export of manufactured to India. The St. Louis Times says: "Lumber, grain and provision paper are offered in in-'creased amounts, and bills on Eastern and Southern cities are more numerous. The indications are favorable for an increase in the volume of trade in all prices of leading staples are stiffening. The order trade has improved materially during the last several days, and interior increasing numbers." The Commercial Gazette, of the same city, sa. s: "Business former is not excessive in Europe, as the has been very good since our last issue, improvement."

We might multiply quotations of this kind from papers received within a week until we had filled the page. Those we have given are enough, however, to show that the indications of revival are by no 37,733 in 1875-1872, and that the price of means limited to this market. With the Chili bars was £72, against £79, £76, £81 exception of one or two bilious journals and £103. staples and industries, and is enlarging like the Chicago Journal of Commerce, we its scope every week. The movement is have not found a paper among our exfree from speculative excitement, and changes which does not have something appears to be based on natural require- encouraging to say with regard to the conments. We see the effect of the revival dition of business and the prospects of the near future. It may be, as some would have us believe, that the American people are mistaken on this subject, and that recovery is impossible until we change our financial policy, or our tariff policy, or our political system or something else; but the fact remains that we are experiencing the benefits of recovery, and that there of a general industrial and commerand well supplied, and the volume of curfacturers and merchants are content for the within their incomes. The crops are good, facturing is increasing from day to day the consumptive capacity of our people. cannot expect a sudden rebound from dullness, and no general appreciation in values can be looked for as the first result of an increased demand. But there is great cause for encouragement in the decidedly improved condition of things, and if we do not expect too much we shall not be likely market. This latter cause has, we believe, to have occasion for disappointment. Our only advice to manufacturers and mer- recovery of some importance in the Lonchants is to do all they can to give a don market, although a slight rebound in tion look for a full and improving de healthy stimulus to business by showing a Chili bars of 10/ has occurred from the American company in which they are intermand." Concerning the outlook at due amount of enterprise, but not to dis- lowest point in August-£70. 10/.

The Decline in Copper.

The depreciation in the value of copper, both in Europe and here, has been so extraordinary, especially since August 1st, as which have brought it about. For some time past the European metal

markets have been unsettled. During the past eighteen months failures of large New cotton is coming in more freely and firms in England have been of frequent meeting a ready sale, and several occurrence, particularly at London, and although they have ranged through all branches of trade, houses engaged in the more activity, especially in demands and tin, were looked upon as among the Europe. from country correspondents. They most solid values then dealt in. Precisely come in the shape of paper for discount three years ago Chili bars commanded and orders to ship currency. Things £81, and Straits tin £124 per ton; they are look more cheerful, and bankers are worth now £71 and £70. 10/. There has happy. A man who wanted to borrow been a temporary rebound at times, but \$10,000 or \$20,000 has been a stranger at the general tendency has been downward, most of the banks for months past. A and the great importing firms have few such were around yesterday, and been, with few exceptions, heavy losers. their advent was welcomed with great The quantities afloat being in individual cordiality." The Cincinnati Trade List cases mostly large, and coming from a great ays: "The general condition of trade is distance, the percentage of loss on these inimproving. Local and foreign advices voices has in many instances been heavy. indicate a toning up of markets and a These metals have had but little speculaconfident trust in a revival of commer- tive support during the three years, but in cial activity. In some branches of busi- spite of the dull times consumption has ness more favorable views of the fall been quite active. The losses sustained by trade are held than in others; yet the dealers and consumers have been lessened feeling that hard pan has been reached by the conservative course pursued throughand the reaction about begun, is quite out by buyers in not anticipating requiregeneral. Some merchants think the ments. Their operations have been merely prospects of business are improving, in- on a hand-to-mouth basis, hence they are dependently of the impulse of the fall considered to be in a sound position at trade. The higher price of greenbacks present, and well able to re-enter the is appreciating the values of merchan. markets the moment they are convinced

As regards copper in particular, several sustained that the same inference-in- disturbing influences co-operated to precreased activity-is a legitimate conclucipitate the decline in August, the princlusion from either premise." The Price cipal one being the fluctuations in silver, The fear of a general war in Eastern Europe also checked business, and this apprehension is not yet set at rest, but the main impediment to a revival in the metal trade, and in general business in Europe, is found in the want of confidence on the part of departments at an early day, and already leading operators, despite the extreme ease in money matters. Speculative investments are shunned by them, however cheap a metal may seem, and the European marbuyers are making their appearance in kets are thus carried back to the plain workings of supply and demand. The following statistics will show: After deand prospects are flattering for a steady ducting the 1255 tons affoat from Australia, advised by mail, and the 3600 tons afloat and chartered from Chili, it will be found that there was a visible supply of copper in England and France on August 1 of 31,803 tons, against 29,704, 32,691, 39,279, and

GREAT BRITAIN'S TRADE MOVEMENT IN COPPER. January 1 to July 1.)

1876	43,253 38,506 35,339	Export. Tons. 24,623 23,418 29,427 27,524 20,747	Excess of Import. Tons. 14,650 19,835 9,079 7,815 20,805
81	FOCK IN ENG	LAND.	
August 1, 1876 July 15, 1875 July 15, 1874 July 15, 1873			18,404

spite of the 2363 tons of Lake Superior cophere between January 1 and June 28 this together, has been satisfactory thus farthis year, compared with the corresponding period of 1875, but that in England alone is chiefly attributable to the discouraging news regarding manufactured copper received from British India, causing manufacturers to slacken production for that

Our own market has shown little vitality says: "The improvement in some lines of to keep one's business well in hand, but this year, and although 17,000,000 pounds trade is gradually becoming more per- not a good time to expand. Prudence, have been either shipped to Europe or ceptible, and many branches where economy and foresight are still the condi-engaged for that destination, we had hithertowe have only heard complaints of tions of safety, and they are never more early this month gradually dropped to a dullness, now report increased business. necessary than at the critical moment of point even below the one to which copper was depressed when, two years ago, the corner in it collapsed. During the past week a couple of thousand tons have been taken for export, supposed to be for the French government, the figure named being 19c. This purchase is included in the 17,000,000 pounds above alluded to. Adding thereto what has been exported in the shape of metallic cartridges, and it will be found that one-half of this year's product of Lake Superior is thus going abroad. This circumstance now begins to strengthen the market very

The demand for brass goods has been reduced to a minimum, and although importation, working and distribution of stocks are unusually light, speculators Southwest the feeling is hopeful; in the metals have probably suffered more in have not yet appeared in the market to re-West and Northwest it is confident. The proportion than those engaged in any other store prices of copper to where they were Chicago Tribune says of the situation in commercial or industrial pursuit. Three early in the year-the speculative spirit that city: "Nearly all the banks report | years ago the two leading metals, copper | being apparently as dormant here as in

The Stove Trade.

After a somewhat careful canvass of the stove trade, we are satisfied that there is less present occasion for the gloomy feeling expressed by a majority of manufacturers than there has been at any time since the panic. Prices are low, and the margin of profit small, but there is a good prospect of a fair fall business, and but little danger that any considerable quantity of desirable goods now in stock will be carried over into next year. Extensive preparations have been made to meet even the limited demand expected, and the activity in the pattern shops shows that there is no present probability, at least, of a return to the plain goods and standard styles of former years. What the trade have learned to regard as "frills," are in as great demand as ever, and, all other things being equal, the stove which has the most 'frills" seems to stand best in the estimation of dealers. We notice a steady improvement from year to year in stoves, and the problems of economy and convenience seem to have been so carefully and intelligently studied that there appears to be no longer much chance for really important improvement. In the matter of ornamentation, there have been some striking novelties introduced this year, but there is still an evident conservatism among manufacturers which leads them to follow the old and conventional forms. The urn is one example of this. Uscless in itself, and employed only for ornament, it would seem as if there would be but little difficulty in finding an acceptable and appropriate substitute for it, which should have the merit of newness, to say the least. We notice, however, a willinguess to venture such experiments among the more enterprising manufacturers, which promises to bring about good results. The fact that dealers are only buying the latest goods, and that the inducements to purchase passe styles must be very strong, shows that untiring enterprise is the condition of success n stove founding, and this enterprise must take the direction in which it is already displayed to best advantage, i. e., in the pattern shop.

Sheffield Coming to America.

We print on another page two communications of more than ordinary interest and significance, announcing the organization of the Sanderson Brothers Steel Company, for the manufacture in this country of the steel hitherto made for the American market by the well known house of Sanderson Bros. & Co., in Sheffield. The The foregoing statistics show that, in new company have purchased the Geddes Steel Works, at Syracuse, N. Y., formerly is no apparent obstacle in the way per shipped to England and France from owned by the Sweet's Manufacturing Company. They have also purchased of San-There is a perceptible improvement in cial revival. The money markets are easy year, the visible supply in those countries derson Bros. & Co. all their stock of steel was but 2009 tons larger than last year at in the United States, together with the pects for a good fall business are more rency is adequate to the requirements of the corresponding date. On the other right to use their name, trade-marks, patcommerce. The desire to do a safe and hand, as regards England in particular, it ents, and all the methods, materials and legitimate business is general, and manu- will be seen that the excess of import over processes employed in the Sheffield works. export, although 5185 tons less than last The skilled workmen are from Sheffield, chandise, although money is abundant present to make small profits, and live year, left a stock slightly larger than a year and the aim of the company will be to ago. The figures show, however, that produce in this country a steel identical and the re-employment of labor in manu- distribution, taking England and France in quality with that made by the Sandersons in Sheffield.

> We comment upon the announcement thus prominently, for the reason that it is this has been less so. This, we presume, of more than momentary interest. The Sandersons of Sheffield were among the earliest manufacturers of cast steel in Great Britain, and were the first to realize the extent and value of the American market, and to engage in the manufacture of been mainly instrumental in preventing a steel for export to this country. That they should be the first to abandon this market, so profitable to them in times past, to an ested, shows that they are still as keenly

were a generation ago. It is an admission on the part of those with the largest interests at stake, that England can no longer manufacture steel for the American market, and that the only way in which Sheffield can hold its own against the competition of American makers is to come here. For years the steel makers of that and other English cities have found some con- rich's concluding paragraph, as a sample solation for the loss of American orders, in the hope that they would be able at some time to regain their lost ground. They have cherished the delusion from year to year that the American tariff would be swept away at the next session of Congress, and have believed, in spite of numberless proofs to the contrary, that, because of this tariff, American consumers were forced to use inferior grades of steel, which they would promptly abandon as soon as they could import English steel under a low duty. It cannot be denied that they have had some encouragement for this belief in the efforts of a small, but very respectable, minority of American consumers of steel to have the duty reduced to nominal rates; but during the years of disappointment which have passed since this movement was begun, the American steel industry steadily expanded, and the standard of quality advanced in a ratio more than proportionate to the increase in the quantity of our steel product. A majority of consumers found that they could supply their wants quite as well at home as abroad, and only those refused to accept American steel who from habit, prejudice or the fear that an established reputation would suffer from any change of material used, preferred old and well known British brands. If any one doubts that we are making and can continue to make as good steel in the United States as can be had in commercial quantities anywhere in the world, he need but examine our exhibits of steel and manufactures of steel at the

We have no doubt that our steel makers will welcome the new company to a fair of argument. If Prof. Hinrichs can logiand friendly competition in the market from which they have practically driven chemistry, he should certainly do it in the the Sheffield house. Whether the prestige of old names and trade-marks will be worth as much now as it would have been to a similar company ten years ago, remains to be seen. Fortunately for those interested, the new company is not wholly this theory the possibilities, if not the dependent upon these aids to success. It promise, of a new and exact science of will have the advantages of an excellent molecular physics. plant, ample capital, experienced management and a well trained corps of workmen It is an important addition to the steel business in this country, and should the success of the experiment of making English steel in America realize the anticipations of those who have undertaken it, we shall not be surprised to see the business of more than one English house with the United States surreadered to American stock companies operating largely on English capital.

Geometrical Chemistry.

The Popular Science Monthly-better known as Science Pop-for September, contains a letter from Prof. Gustavus Hinrichs, of Iowa City, which we think might have better been omitted. It purports to be a criticism of Prof. Henry Wurtz's paper on Geometrical Chemistry. read before the American Institute of Mining Engineers in February last, but is in reality a mere tirade of personal abuse, of which no gentleman, and certainly no scientific man, should have been guilty. As Prof. Wurtz's paper was first made public, after its presentation to the Institute, through The Iron Age, and as we feel, and have more than once expressed, the very highest respect for the able and conscientious author and his views upon all subjects, it may not be out of place in these columns to utter a protest against unwarranted attacks upon his theory by empirics in science who are entirely incapable of understanding it. Prof. Hinrichs has certainly placed himself in a position which exposes him to the charge of belonging to this class. His scientific reputation is peculiar. Among chemists he is regarded as not much of a chemist, but considerable of a mathematician; the mathematicians, on the other hand, consider him rather a light weight in mathematics, but believe that he is entitled to recognition as an eminent chemist. Evidently he considers himself a bright and shining light in both sciences, and it was possibly in the hope of creating this impression in the minds of others that he has ventured to attack a geutleman who is both a chemist and a mathematician of recognized standing. But whatever his object, he undertakes "to expose the palpable "fallacy of the whole fabric" of Prof. Wurtz's theory, and it is not at all surprising that he quite fails in the undertaking. The only assertion he ventures concerning it friction; as soon as the gate leaves the seat it from the outside. This pipe is carried to the which can be regarded as criticism, is that is entirely free, 6th, An indicator on the highest point of the space below the air cham. gears, the motion will be upward; below the in trade.

use of arbitrary multiples. This is simply untrue, and shows that Prof. Hinrichs derstood, what Prof. Wurtz has said and written. The point, being simply a commending it to their notice. question of fact, is not one which admits therefore, but will merely give Prof. Hinof what he is pleased to consider scientific criticism: "The whole thing is so utterly worthless, so absolutely destitute of every gleam of science, so horribly uncouth even in its verbal exposition, that 'this short notice is most reluctantly given, simply to protest, in the name of American science, against the filling of our scientific journals with material that exworld."

We do not think that Prof. Hinrich's need be troubled about the effect upon 'American science" of anything Prof. Wurtz has written. He might, however, have considered the effect of such a letter chemists for intelligence and courtesy. Every indication now warrants the belief that Prof. Wurtz's discoveries will utterly demolish the "new chemistry," and compel a return to the electro-chemical theory of Berzelius as a starting point for investigation into the composition of matter. It is enough to say at this time that his preliminary paper has been received by the chemical profession with respectful attention, and that the demonstrations yet to come are awaited with an interest amounting almost to anxiety. That it should be fully accepted at once, as the trout accepts a fly is not to be expected. Truly scientific chemists neither accept a theory in this way, nor reject it in the way Prof. Hinrichs has seen fit to adopt. They do not, moreover, violate the ethics of the profession by berating each other like common scolds because of differences of opinion which have never been brought to the test cally demolish the theory of geometrical interest of science; if not, he would do well to refrain from flinging gratuitous insults at such gentlemen as Drs. Wurtz, Sterry Hunt and Chandler, and the score

Centennial Notes.

POTTER & HOFFMAN,

Philadelphia, have quite an interesting display of the various specialties manufactured by the firms which they represent. Their location is at Section B, Column 30, Machinery Hall, and Glasgow Iron Company are shown samples of company completed and put in operation last As there must be at least two sides to a com tons; also a plate mill containing three heating furnaces, and one train of rolls 96 inches long, annual capacity 6000 net tons. From the Pine Iron Works are shown finely flanged samples of swaged to a much larger diameter, show the combines a very high degree of tensile strength. Hussey, Binus & Co.'s patent plain back solid had regained all their previous intensity. cast steel shovels are displayed on a rack facing toward the entrance from the east end of the building. This shovel with socket and straps firm. The blade tapers, increasing in thickness from point to socket, thus securing greatest method of manufacture. Lever and cam valves made by Lansdell & Leng, New York, are also that it is more compact, stronger, neater, more features are as follows: "1st. A straight open passage. 2d. Compactness; it only occupies about one-half the space of an ordinary valve. 3d. It is constructed so that all the pressure

alive to their business interests as they Prof. Wurtz has reached his results by the wheels shows at all times the position of the ber and is open at the end. The object is to centers, downward, while half way between gate." Messrs. Potter & Hoffman have still force water into the cylinder (either by hydrant other specialties on exhibition, but our space pressure where it is available, or by a small in a cast iron box, the top of which can be will not allow further detail. An inspection of force pump, which is supplied with the machine readily removed without interfering with the has not read, or else has not un-their display will be of service and interest to when desired) against the volume of air which

M'NEALS & ARCHER

of argument. We will not pursue it, Burlington, N. J., have an exhibit of cast iron pipe, &c., in Machinery Hall and B 32 outside, between South Machinery Hall and the Shoo and Leather Building. This firm are the sole manufacturers of O'Neil's patent gas and water main connections for cast iron pipe, terra cotta or clay pipes, which combines some very important improvements, and is worthy of a care ful inspection. The joint is on the ball and socket principle, and can be sold for about the same price as the common bell and spickot pipe No finishing is required on a pipe after it is molded, a leaden jacket or washer is inserted poses us to the ridicule of the scientific in base of the bell, and furnished to the trade complete ready to be laid. There is no hot lead used, no roping, no fire, no calking, and where five or six is commonly used, only one in this, and it cold. It may be deflected at an angle of 25° without causing leaks, and is a submergable joint, and may be laid under water. There is also a large saving in digging as his upon the reputation of American trenches, as it does not require the same width as the ordinary pipe. About half a mile of this pipe is laid on Pennsylvania avenue, Baltimore and by practical operation has proved entirely satisfactory after more than a year's trial; it is laid over bridges, and with 60 to 70 lbs. pressure per square inch. A large exhibit of this pipe can be seen outside of Machinery Hall, pipes of 30 inches to 3 inches, under a pressure of 200 to 300 lbs. per square inch, which shows the security and efficiency of the joints, some of which are deflected. The firm also display east iron soil joints for drain pipes, &c., which have quick connection (a joint made in on minute), and any section may be removed without disarranging the succeeding section. It is well adapted for underground telegraph wires, and has been favorably reported upon by practical electricians. Mr. O'Neil can be found at the exhibit of this firm, B 3-22, Machinery Hall, and will have pleasure in meeting parties interested in this department of trade.

PHILLIP NEWKUMET.

Philadelphia. In the Mineral Annex to the Main Building there are some exhibits of fire bricks, designed to illustrate the various uses to which they are applied. Mr. Newkumet has a very interesting display, consisting of two miniature clay gas retorts, a bench of fives and a bench of threes, complete in every particular. Mr. N. also shows blocks for soling and lining blast furnaces, lime kilns, foundries and glass houses, and a very handsome exhibit of white of emment chemists who have found in building brick, warranted to stand fire and

B. KREISCHER & SON.

of the Staten Island Clay Retort Works, also make a neat display of similar character to the above, which may be profitably studied by par-

ties using that class of article.

FIRE EXTINGUISHERS AT THE CENTENNIAL. A competitive test of portable fire extinotherwise, was ordered by the Judges of Awards, to take place on Friday, September city office, 208 South Fourth street. From the 8th, at 4 p. m., on the grounds east of the Brewer's Building. For some unknown reason muck bar, broken, bent, twisted, &c., so as to however, all, with but one exception, failed to show the properties of the iron, and a plate of put in an appearance. The "Pneumatic Fire C. H. No. 1 sheet iron, 20 feet long, 80 inches Extinguisher" was promptly on the ground wide and three-eighths of an inch thick; and a and ready for service before the appointed C. H. No. 1 flange head, 82 inches in diameter time, and the exhibitor was very much disapand five-eighths of an inch thick. The above pointed at the non-appearance of competitors. spring, four double puddling furnaces and one parison, as well as to a bargain, an important train of muck rolls, annual capacity 5000 net element to an entirely satisfactory result was wanting. To add to the discouraging circumstances, the judges were unaccountably absent and at 5 o'clock it was determined to proceed without them. A pyramid of 12 varnish bar-Pine fire-box iron, of which they make a specialty. This brand of plate iron was used in knocked out and the interior partially filled with the construction of the Centennial locomotives shavings, and the whole well saturated with exhibited by the Baldwin Locomotive Works coal oil, making one of the most inflammable and Porter, Bell & Co. In two glass cases oc- piles that could be devised. A member of cupying the front portion of the space are the Centennial Fire Department, an experienced shown a large number of interesting samples fireman, was to give the word when, in his of homogeneous steel plate, made by the Bay opinion, the fire was at its most unmanageable State Iron Company, of Boston. Pieces of plate bent, folded, twisted, elongated by test dously fierce blaze ensued, when upon the sigstrain, and with holes punched, and then nal being given the stream was turned upon it with instantaneous effect. After a few seconds, extreme toughness of the metal, which also from some defect, the nozzle had to be changed, and during the time so occupied the flames stream was applied the second time, and in two minutes the fire was completely extinguished. This remarkable result was attained by the use complete is wrought from a single ingot of of water only, its effectiveness being due to cast steel, homogeneous throughout, without the peculiar method of application, which apweld or rivet, under patents controlled by the pears to render it at least equal, if not superior, to chemicals. The machine used was similar in size and general appearance to most strength where the strain is most severe. The other extinguishers, having straps for slinging solid steel ingot, representing the first stage of on to the back of the operator, and a strong manufacture, the trimmed blank, and finally, rubber hose with three changes for sizes of the finished shovel, fully explain this improved nozzles, viz., 3-32, 1/4 and 1/4 inch-the first, however, being the most effective size. Within convenient reach of the left hand is a cock or displayed by this firm. They claim for this valve | faucet by which the entire operation of the machine is controlled, no previous preparation simple in construction, less liable to get out of (after charging) being required. The cylinders order, operates quicker and will wear longer are of heavy copper, made to hold with safety than any valve in the market. The special three hundred pounds pressure per square inch -having convex ends and a flange at the bottom which enables it to be stood upright. Near the top of the interior is a convex diaphragm, which in connection with the top end of the bears on the back of the gate, and is, therefore, cylinder, forms an ellipsoidal air chamber, perutilized in keeping the valve tight. 4th. It is fectly isolated from the rest of the cylinder, opened and closed by one-quarter turn of the with the exception of a small communicating wheel or lever handle. 5th. Freedom from pipe, having a valve which is opened or closed

force for the expulsion of the water. Now it is obvious that as the water is being forced out by a simple adjustment. The exhibit is located the air is expanding to its original volume, and in space Section C Cot. 26, Machinery Hall. the air is expanding to its original volume, and consequently decreasing in pressure, so that when the water is about two-thirds spent the pressure would be insufficient to carry it with any force. This point is met in a very simple manner as follows: The valve in the pipe connecting with the air chamber is opened and water forced into the cylinder until it can be heard (very distinctly) passing through the pipe into the air chamber. As the ower part of the cylinder is completely filled with water, all the air must necessarily have been forced into the air chamber, with s ressure due to the amount of compression The valve in the pipe is then closed, preventing the escape of air, and the water allowed to run out of the cylinder by opening the lower cock. to which the hose is attached. As it is neces ary to admit a supply of air above the water to prevent a vacuum, a small equilibrium valve is furnished for this purpose. Now, after the water is run off, we have the air chamber filled with the compressed air, and the est of the cylinder with the air at atmospheric sure. The equilibrium valve is then closed, that communicating with the air chamber opened, and the cylinder again filled with water intil it can be heard in the pipe as before, and the machine is charged and ready for use there being in the air chamber a pressure due to the compression of two volumes of air, so that when the last drop of water is forced out there will still remain a pressure due to the first compression, which also obviates the necessity for the duplicate operation, except in the primary charging. As a pressure of 150 pounds per square inch may be very easily attained by the use of the pump, the stream has a tremendous velocity, and appears to owe much of its effect upon the fire to its mechanical action. The quantity of water used in the test was about 41/2 gallons, the capacity of the machine being 8 gallons. It has been stated, as an objection to the machine, that the air pressure could not be maintained for any length of time, as it would be unavoidably impaired (sufficiently to render the machine inoperative when needed) by leakage. This, however, is not true, as all the valves are below water, and any leakage which takes place must be of water and not of air. This point will be obvious to any one conversant with the subjects of hydraulics and pneumatics. The machine used in the test was charged four months ago, and does not show any appreciable diminution of pressure. At the Canadian Exhibition of 1875 it was awarded the first prize as a fire extinguisher. The exhibit is made by the patentee, Mr. John Taylor, of Montreal, Canada, and comprises a full line of sizes and different styles of finish. It may be seen in Sec. H 20, Canadian Department, Main Build-

RICHARD DUDGEON, of New York, exhibits a variety of small tools for boiler makers' use, &c., also a small rotary engine of novel design. A tube expander for making the joints of boiler and other tubes in be a profitable one to all concerned,-Euthe tube sheets, appears, from specimens of work performed by it, to be very efficient, and is free from several objectionable features incident to the use of the old-fashioned ferrule expander. In construction it is exceedingly simple, and it is capable of doing the work quickly and well, without danger of injury to either the tube or sheet. A turned steel cylindrical plug of the proper size to enter the tube freely is recessed at three equidistant points for the reception of hardened steel taper rollers, their outer faces being parallel with that of the plug. The rollers are introduced from the central opening, the shape of the recess being such that, while allowing them to project a considerable distance beyond the face of the plug, it is sufficiently contracted at that point to prevent the rollers dropping out of place. A steel taper pin is introduced into the central opening, and bears equally against each of the rollers, forcing them outward as the tool revolves, and pum to the ore beds. The engineers were exerting immense pressure on the interior of the at work surveying for the best route expanding it uniformly and not bulging it above and below the sheet, as is the usual method. Several of these tools, of different sizes, are included in the exhibit. There are several hydraulic jacks (Mr. Dudgeon's patent), enough to supply both places for many years mong which may be mentioned a horizontal jack; a broad based jack, designed for use in railroad shops for lifting locomotives, and also one for general use. All are strongly made, and capable of exerting great pressure with but slight power applied. There is also a portable almost as cheaply as to Wampur, when the hydraulic punch which is intended especially for boiler work, although not ne limited to that class. A very powerful portable punch of what is known as the "clamp" pattern, is exhibited, having capacity for three fourths inch hole in five-eighths inch iron. The der the farms of men who now call themselves rotary engine, previously mentioned, is of the utmost simplicity of construction, and the few parts of which it is composed must enable it of the richest of its size in the State, and this to be made at small cost. There are two parallel shafts, each carrying a gear of the same People must use iron, and almost every day pitch diameter, the teeth of which are of a peculiar form, entirely different from the epicycloidal teeth of gears used for transmission of power. The ends of the teeth are turned perfectly true for the purpose of making steamtight joints upon the abutments, the latter be- be successful. With the ore, limestone and ing placed on each side of the gears where they coal right at our doors, we can manufacture come in contact. The abutment on one side is iron in Lawrence county so cheaply as to make movable by means of a hand lever, and has a money, while those in less favored localities pipe connection with the spaces between the are losing. And when good prices do come, teeth. By moving the lever so that the steam we shall reap a harvest before the others have opening comes above the line of centers of the recuperated from the effects of the duliness

shuts it off altogether. The whole is incased readily removed without interfering with the operation of the engine. As the machine of tains no working parts except the revolving pistons or gears, the Hability to derangement or wear is slight, and the latter easily taken up

Water Pipes for Rio Janelro.

A contract for water pipes has just been placed in Glasgow, which, for its extent, its money value, and its importance from coming just at the very time when it was most wanted, is, we believe, quite unparalleled in the history of the pipe founding trade. It is one for 80,000 tons, and is intended for a great water supply scheme which is projected for the city of Rio de Janeiro, and we understand that the contract price for the pipes delivered at that port is about £1,700,000; so that in various respects it is an order whose importance can scarcely be over estimated in the present depressed condition of most branches of the iron industries. As many of our readers are well aware, Glasgow has long been the principal seat of the pipe founding trade. both for our excessive home demands and for exportation to almost all parts of the world. For a long time that branch of trade has been very busy, but lately the various pipe founding firms have been growing anxious as to the immediate future. This contract, however, now emoves much of the anxiety which existed. When it became known, a few months ago, that there was a contract of very gigantic proportions for water pipes about to be thrown upon the market, pipe founders, both at home and abroad, :ron merchants and other in crested persons, did their best by instituting quiries and opening negotiations to determine the direction in which it should go; but when the principal contractor became thoroughly assured that in Glasgow alone there were the requisite facilities for taking in hand such an nmense order, so as to execute it with the ecessary promptitude and on such advantageous terms as seemed in his eyes to be a sine qua non, he showed a leaning in favor of the offer from that city. Practically, we believe, there was only one genuine from Glasgow, because it was found that the order was one of such unusual proportions as to require that it should be taken in hand by the three leading pipe founding firms in alliance. There are to be two conduits leading from the reservoir or source of supply to the city of Rio de Janeiro, and the present contract is limited to supplying the pipes for the same, the area of distribution within the city being already completely and efficiently The pipes just contracted laid with mains. for are chiefly 311/2 inches in diameter, only about 10 per cent. of the whole being of smaller sizes. Within the next couple of months or so the delivery will be commenced, and it will be continued in regular quantities over a period of 21/2 years from the time of closing the contract. As this is such an exceptional stroke of business in connection with the iron trade, we feel bound to offer our congratulations to the Glasgow pipe founders who have been so fortunate in securing the order. Let us hope that it may

The Ore Fields.

The New Castle (Pa.) Courant, says: We paid a short visit to the Lawrence county (Pa.) ore fields on Monday last, and found them about as they had been represented to us. They are situated in Shenango township, about four miles from Wampum. The ore is certainly of very superior quality and richess, and the veins vary in thickness from 8 to 16 feet. A large amount has been and is still being taken out. It is now wagoned to Wampum, at which place it is shipped by rail, prin cipally to Youngstown. We learn that Mr. J. K. Shinn, in company with some parties in Youngstown, is preparing to build at once a narrow gauge railroad from Wamwhen we were there, and it is supposed the road will be completed in three months

A road should by all means be built to New Castle, as there is doubtless in that region ore to come. Judging from the formation of the country, we should say that developments will soon be made which will show the supply to be, practically, almost inexhaustible. A road can be built from the ore beds to New Castle expense of a bridge at the latter place is taken into the account.

The land in the vicinity is being rapidly eased by practical men, and it will be but a short time till great wealth is discovered un-

Lawrence county will soon take rank as one ore will be a prominent feature of its wealth. adds another use to which it is put. The business will have its ups and downs as everything has, but after all the iron must be used, and manufacture it at the least expense will always

BUSINESS ITEMS.

CONNECTICUT.

· The Hull & Belden Company, Danbury, are busy on iron and steel drop forgings. They also have a lot of machine work under way They are getting out a large lot of the Lowell Wrench Company's hand vive, a very handsome, handy tool. Since June they have turned out 1300 of their improved Danbury drill chucks. They are just starting a lot of the Climax pipe wrench; beside these matters they are at work by contract, on a number of hardware special-

NEW YORK.

Messrs. Brooks & Wadsworth, manufacturers of stove boards, are probably as well known to the stove and hardware trade as any firm in our city, although they have been but five years in their present business. Starting in a small room in the city of Rochester, they now use an entire five story store, No. 210 Water street, and turn out 500 stove boards per day, and at some parts of the season double that number by running their works at night. They make a cheap, plain, round zinc board, and a wood board, but their great specialty is the iron lined board, which is made in all shapesround, square and oblong. The bending or other ornamentation on this board is put on after the zinc and iron are joined together, and is done through both parts, so that by the use of No. 24 sheet iron, which they use this season for the first time, it is almost impossible to get the board defaced by any ordinary use. This feature is secured to them by patents which they control. The manufacturers claim that it is the only fire-proof stove board in MASSACHUSETTS.

Weston's Foundry, at Hingham, was burned Friday. Loss, \$20,000; insurance, \$11,000.

The Lanesboro Furnace is about going into

The Van Deusenville Furnace, which is the only charcoal furnace in Massachusetts in blast at present, will run until Jan. 1, 1877.

As an inducement to remove the Howe Scale Works from Brandon, Vt., to Holyoke, the ettizens of the latter place offer to take \$250,000 stock, and promise shops rent free.

The Mason Machine Works, Taunton, are filling an order for 200 cars. They have just sent a new engine to the Chicago and Lake Huron Railroad, and are making seven more for the same road.

PENNSYLVANIA.

The old rolling mill at Bethlehem has shut down, and a number of the hands are about leaving for Boston, where they expect to flud

The Catasauqua Manufacturing Company started the rolling mill at Ferndale on Monday last, to fill an order for skelp iron. This mill will be operated by employes from Catasau-

qua.

The Crane Iron Company bave blown out No. 1 Furnace and started No. 2 instead. This furnace was making Beasener pig, and No. 2 will produce the same. The company expect to blow out No. 5 furnace also.

The Thomas Iron Company are laying a nar-row gauge railroad from their furnaces to Rob-bins' farm.

miners in the Lebigh district have ac The miners in the Lenigh district have accepted a reduction in their wages of about 15 per cent. for the coming month. There is also a reduction of tolls and freights.

Ellendale Forge, in Dauphin county, was recently sold at sheriff's sale, in Harrisburg, for \$14,050. Joshua M. Wiestling, Esq., of Harrisburg is the purchaser.

\$14,050. Joshua M. Wiestling, Esq., of Harrisburg, is the purchaser.

The Cornwall estate, Lebanon, is sending all its employes, about 700 in number, to the Centennial Exposition. A car load goes down each day, and it will require 8 or 10 days for all to make the trip. This is the kind of attention that disarms labor of its prejudice against capital, and cultivates the true idea of capital and labor having common interests.

The Marshali Furnace, at Newport, is repairing, preparatory to going in blast.

The Paxton Rolling Mill, Hamburg, bave given notice that all regular employes of the

given notice that all regular employes of the mill will have their fare paid and a ticket of admission to the Centennial furnished them:

mill will have their fare paid and a tieket of admission to the Centennial furnished them; also a return ticket.

Grove Bros., Danville, are blowing out their large furnace, Columbia, for repairs. They will be ready to resume operations in about two weeks.

At the sheriff's sale of the personal property of the Bechtel-ville (Berks county) fron Company, on the 21st ult., some 660 tons of iron ore were knocked off at 50 cents per ton; 325 tons of coal were soid as follows: 100 tons for \$100, 150 tons for \$40, and 75 tons for \$27.

The Sharon Herald says, regarding from matters in that town: There is nothing new to report at either of the mills: both are working double turn in nearly every department. The noily hurry that appears in either mills is in the hoop department. Westerman's blast furnace No. 2 is working off admirably, making a very No. 2 is working off admirably, making a very No. 2 is working off admirably, making a very No. 2 is working off admirably, making a very No. 2 is working and it is a very superior job. The liming is Barnes' brick, 14 feet diameter; every circle came in to the half of an inch, and very little cutting was required on the closures. The job was a little tedious, from the fact of the work, and another week was added by the broke and the normal property of the work, and another week was added by the broke and the matter of the work, and another week was added by the broke in the matter of the work, and another week was added by the broke in the matter of the work, and another week was added by the broke in the matter of the work, and another week was added by the broke in the matter of the work, and another week was added by the broke in the property of the season's operations. The mining is being set up. The Bat car loads of the property of the season's operations. The mining is being set up. The Bat car loads of the pob, is first-class. The only fear enters of the property of the season's operations. The broke is otherwise, the workmanship and the property of the season's operat tained is of the material at the knickles of the boshes; otherwise, the workmanship and everything are A No. 1. As the furnace now stands, there is only one thing needed to make it the nattiest furnace in the valley, and that is a new casting house; the one at present there is an old dilapidated affair, which should be at once replaced by something creditable to such an extensive works, and such an enterprising manager is Mr. Bubl. The work on Kecl Ridge Furnace is moving along very slowly. They will be ready some time this fall.

About a dozen men employed in the Chemical

About a dozen men employed in the Chemical Copper Works, Phonixville, bave been dis-

charged.

All the teams which have hauled ore from the Hopewell Mines, in Berks county, to the railroad have been discharged, and the miners expect the same treatment soon. Captain Harvey has discharged some 15 hands from Jones' Copper Mines in Cærnarvon township, the same county.

PITTSBURGH AND VICINITY.

A large number of the South Side Glass Works are in active operations, and the others are preparing to light their fires. The finit glass houses of Atterbury & Co., Adams & Co., Ripley & Co., Doyle & Co., McKee Bros., Bryce, Walker & Co., Campbell, Jones & Co., are running, and King, Son & Co., Duncan & Co., and the Crystal Glass Company will resume shortly.

Notwithstanding the strike of the lamp chimney glass blowers, the works of Evans, Sell & Co., and Plunkett & Co. are running single daylight turn. In the former establishment, the old rates are being paid, while in the latter one of the members of the firm is a practical glass blower, and is engaged in running the "shop" himself.

Mesars, Lewis, Oliver & Phillips' Iron Works, on the South Side, report orders as coming in very heavily at the present time, and that trade now is more active than at this time last year. The machine shops are running night and day. The demand is principally from the oil regions

The demand is principally from the oil regions for oil well rigging.

As before announced, Zug & Co. began work on Monday of last week, puddling iron for nail plate. The nail plate rolls were started Thursday, and the nair machines Monday of this week. This week work will be resumed in the merchant mill. We are glad to welcome the old firm back into the iron trade again.

The Culmer Spring Company, Pittsburgh, have been awarded the contract for both draft and bearing springs, a full equipment on 200

have been awarded the contract for both draft and bearing springs, a full equipment on 200 cars, for the Chicago, Pekin and Southwestern Raitroad. The works are running full.

Another reduction in the rates of freight from Pittsburgh has gone into effect on the Baltimore and Ohlo Railroad and Pennsylvania Railroad lines. This time it is upon glassware, and the rate to Boston, Providence, New York, Philadelphia and Baltimore has been reduced ten cents per 100 pounds all around. pounds all around.

pounds all around.

The butt weld gas pipe mill of the National Tube Works, McKeesport, lately destroyed by fire, is being rebuilt by Wm. B. Scaife & Sons, of this city. The new structure will be fire-proof, the frame work being composed of shaped irons and covered with corrugated iron. There were 17,646 tons of pig iron, 1796 tons of blooms and 3768 tons of serap iron received by rail in this city last month.

VIRGINIA. The Belle Isle Nail Works have recently re-

OHIO The Lawrence Iron Works, Ironton, have an order for cotton ties that will keep it running

order for count lies that for some time.

The Girard Rolling Mill Company have made an assignment to Wm. M. Osborne.

The following were the amounts of pig iron that arrived from different furnaces during the month of August, per flats and barges, and were weighed by W. H. Broadwell, city weigher:

Tons.

Furnace Ashlane Charlot	d .														 					٠		 			1	
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Total																										,

The Belfast Mill, Ironton, started its nall factory Monday. The Lawrence and Ironton mills are fully employed, but orders are very Struthers' Furnace is expected to blow

about the 15th. It has been cold since May 1st.

The Niles Rolling Mill, which is now under-

The Niles Rolling Mill, which is now undergoing repairs, is putting in three new boilers, each 52 inches in diameter and 28 feet long.

Messrs. Cartwright, McCurdy & Co., Youngstown, are manufacturing largely band iron for baling cotton. Each piece of iron is cut off eleven feet long. A patent fastener, called the Canada tie, is also manufactured and attached to each piece of band iron. The iron is subjected to a process that prevents its rusling. The company is employing additional men in this new work, and it promises to be of much importance.

of much importance.

The Bellaire Nail Works resumed full opera

The Beliare Nail Works resumed full operations on Monday last.

The Cleveland City Forge and Iron Company are running their forge department at about the usual rate of production since the "depression;" car links and pins make up the greater part of the product.

The Colwell & Collins Norway Bolt Company's Works, Cleveland, are producing on an average 50,000 carriage and tire bolts per day; their full capacity is about 10 per cent. more than this average. Taey employ 70 hands.

The Russia Mill, at Niles, is running steadily.

The old mill, at Niles, once owned by Mr. James Ward, has a capacity for employing 300 men. This mill has been idle during the last three years, and it is rumored that it will go into operation this fall.

MICHIGAN.

MICHIGAN.

MICHIGAN.

The Silver Smelting Works, at Detroit, are running very steadily and satisfactorily.

The Wyandotte Rolling Mill Company does not make as gorgeous a display at the Centennial as some of the companies, but the competent judge of iron and what it should stand at orce pronounces it the best exhibit on the grounds.

—Wyandotte Courier.

The following, compiled from the Marquette Mining Journal, is an exhibit of the shipments of iron ore from the Lake Superior district for the season, up to and including Wednesday, August 30th:

Place. From MarquetteFrom Escanaba. From L'Anse	160,928	1876. 308,664 234,979 54,136
Total		597,779

blast, with no prospect of resuming.

The Detroit and Eureka furnaces are either in or will blow in in a few days. The directors of the company owning the Iron Cliff furnaces have decided to blow out

The Morgan Furnace blew in about three weeks ago to use up some ore on hand. It will make some 500 tons of iron, and then probably blow out.

ably blow out.

The Wyandotte Rolling Mill Co, have commenced rebuilding the merchant mill, which was sadly demoralized by the burning of the plate mills last November. The new building will be 40x80.

WISCONSIN

The Inter-Ocean, September 8th, says that the paper of the Milwaukee Iron Company was protested by the banks to-day. Several meetings of creditors have been held since Friday evening last without resulting in the relief of the corporation. The embarrassment is an unforning, and King, Son & Co., Duncan & Co., and corporation. The embarrassment is an unforthe Crystal Glass Company will resume shortly.

portant of the place, and a large number of families depend upon them for support. The mills are still in operation, and it is hoped the creditors will grant relief by extension of time. A statement of the Manacial condition of the corp oration is being prepared for the information of the creditors, and until this is completed no definite action can be taken.

INDIANA. Both of the rolling mills at Terre Haute are

n operation.

But two furnaces in Indiana are in blast, viz the Brazil running on Bessemer pig, and the Nelson. The Vigo Iron Company, however, are preparing to blow in one stack, and it will before October 1st.

ILLINOIS.

There are twice as many men employed in the iron and steel mills in Joliet as in 1871.

The zinc mines at Friedensville are believed to be inexhaustible, with a quality surpassed by very few in the world. The mine has been un covered two or three acres in area and to the depth of one hundred and twenty feet. Geologi cal observation and comparison with old Euro pean mines indicate that the ore continues to the depth of several hundred feet. The ore found is mostly silicate of zinc, though great masses of carbonate of zinc occur, both of most excellent quality. It exists in masses vary ing from thousands of tons to small veins One of the largest pumping engines in the world is in use at the mines. The company own in fee simple about five bundred acres of land, beside the mineral right of other lands adjoin ing, embracing altogether the entire range from the top of the mountain to the village of Friedensville.-Allentown Chronicle.

Special Notices.

The "Common Sense" Hay Cutters, "VICTOR" CORN SHELLERS, and "PRIZE" CHURN are the best

A. B. COHU, Manufacturer, 197 Water St., one door from Fulton, New York.

"Everything for the Farm," containing illustrations of 200 of most improved implements for Farm, ent on receipt of Mc.

Wanted,

A partner to take half interest in a Hardware, Tin-ware and Stove house, in a good town in Southern Indiana, doing a good wholesale trade in the tin-ware line. Good clean stock, well selected. Capi-tal invested, \$8000. Will give a good live tinner or hardware nan a good tande. Address,

Mitchell, Indiana.

WANTED,

Wire Rod Roller. A competent man who thoroughly understands

colling Wire Rods, can find a situation with steady work and good pay. Address, stating length of ex perience in rolling wire and where employed,

WIRE RODS,

Office of The Iron Age, 10 Warren St., N. Y.

ALLIS. BULLARD & CO. (Limited), Railway Supplies, Machinery & Metals, 14 Dey Street, New York,

Offer for immediate delivery the following list of

Tools and Machinery, viz:

One 12 x 36 inch Greene Cut-off Engine, in perfect order; one Brown & Sharpe Universal Milling Ma-chine; one do No. 1 Screw Machine with lot of Tools; one 8 inch Pratt & Whitney Shaper; one do. 16 inch Planer, and 13 inch x 4 feet Lathe; Pond Planer, 22 x 5 ft.; two Fowler Presses, and lot 15 and 18 inch Lathes; all in excellent condition

SEWING MACHINES FOR EXPORT.

1000 Double Thread Lock Stitch "Bartram" Sew ng Machines, elegantly finished, easy and quick corking, salable, will be sold very low for cash, nspection solicited.

THE HULL & BELDEN CO., Danbury, Ct. We need the room which these occupy, and will sell them exceedingly low, if they can be removed before Oct. 1st.

Wanted, Light T Rail.

Parties having for sale 50 to 100 tons of slightly worn, 25 to 35 lbs. T Rail, can find a purchaser at a reasonable price, by addressing (with price delivered in New York or Philadelphia.)

D. G. AMBLER, Uties, N. V.

E. HAMILTON HUNT, Hardware Commission, 69 LAKE ST., CHICAGO.

nments solicited. Best of references in New

Important to Manufacturers. BISSELL, WELLES & MILLET, Auctioneers and Commission Merchants, No. 15 Marray St., New York,

15 METTAY NI., New York,
Solicit from Manufacturers and others consignments of Hardware and Cuttery for our weekly
Auction Sales to the Trade, or at private rale for
cash, as desired. Our facilities for moving large lines
of goods are unsurpassed. Advances made if desired.

SPECIAL NOTICE MEN'S SINGLE GUNS,

addition to the former line of A. Simon's, Liege,

SILESIAN SHEET ZINC, Imported by
LOUIS WINDMULLER & ROELKER, 20 Reade Street, N. Y. Specialties of Wrought, Cast, or Sheet

Iron or Brass,
Made to order in a SUPERIOR MANNER, AT LOW
PRICES, by the CORRUGATED METAL CO., East Berlin, Conn.

DISCOUNT SCREW LIST.

Dayton & Lamberson, 97 Chambers St., N . Y.

Special Notices.

ANTED,—A first-class business man familiar with machinery and manufacturing, capable of handling large botics of men, desires a responsible position. References satisfactory. Address, IRON AND STEEL,

Care of P. O. Box 813, Bridgeport, Conn. HALL & HARBESON.

Chemical & Physical Instruments.

191 Greenwich Street, N. Y.
SPECIALTY.—BUNSEN'S GAS BURNERS, for all heat
inguiposes; BUNSEN'S IMPROVED GAS COMBUSTIFURNACES, with 10, 15 and 25 burners. Fine Brass an
Metal Work made to order for Metallurgists, Chemist
Experimenters, Colleges, &c.

TO LET.

A Light, Handsome Office.

Possession Immediately. HERMANN BOKER & CO., 101 Duane Street, N. Y.

NOTICE! POND'S TOOLS.

The undersigned has assumed the Personal Property, including accounts, finished and unfinished Machinery, good will &c., connected with the manufacture of Machiner's Tools as conducted by Mr. Lucius W. Pond since 1817, and will continue the said business at the old stand, oor Union and Exchange Sts., Worcester, Mass., under the name of David W. Pond, Successor to Lucius W. Pond.

CARD.—Having assumed the business mentioned above, I solicit Inquiry and Patronage, with guarantee that present standard of Workmanship, and quality of Machinery shall be maintained. A large quantity of Niew And Second-Hand tools Store at 98 Liberty St., New York, will be disco tinued from Feb. 1, 1876, and all sales made from manufactory.

Respectfully, DAVID W. POND,

Respectfully, DAVID W. POND.

SECOND-HAND Machine Tools.

Five 15 in, swing 6 ft, bed Screw Cutting Engine Lathes. One 21 in, swing 8 ft, bed Screw Cutting Engine Lathe. One 14 in, swing 4s ft, bed pulley feed Lathe. One 13 in, swing 5 ft, bed, pulley feed Lathe. Six Common Milling Machine. One No. 4 Smith & Garvin Milling Machine. One No. 4 Smith & Garvin Milling Machine. One 2 Spindle Profiling Machine. One 1 Spindle Profiling Machine. One No. 3 Brown & Sharpe Screw Machine with chasing bar. Three 4 Spindle Drills. One No. 2 Fowler Press. One 2 in, Bolt Cutter. Four No. 1 "Pond" Drills 21 inch swing. One 5 ft. Radial Drill. One 24 In. 25 ft. Planer.

The above tools have been little used, will be sold very low and can be seen at the store of

GEORGE PLACE,

121 Chambers & 103 Reade Streets, N. Y. \$25,000 to \$40,000 WANTED

In the best paying manufactory in the West, situ ated at St. Louis, Mo. The business is thoroughly established, and one that will bear investigation.
The increased demand for its production requires more capital to fill actual orders. It is one of the

Full particulars can be had by address HENRY P. CLARK,

Care of P. O. Carrier No. 63, St. Louis, Mo.

SPECIAL NOTICE.

Having established ourselves in business in this ity for the sale of

AMERICAN HARDWARE, HOUSE-URNISHING GOODS, AGRICUL-TURAL IMPLEMENTS, Etc.,

we beg to solicit correspondence with parties desir-ous of being represented by us in Germany and sur-rounding countries.

HAMMACHER & DELIUS.

HAMBUEG, Germany, April, 1876.

House in N. Y., A. HAMMACHER & Co., 209 Bowery

MANUFACTURERS desirous of introducing their goods to the British and Continental Markets, are advised to inser advertisements in the newspaper "IRON," pub lished every Saturday, at 99 Cannon Street,

London, E. C. SCALE: First 3 lines, 3/; every additional line, 10d Price, 6d. per Copy, or 30, per annum, inclusive o postage to the United States.

Steel Castings.

I have three patents for Dies, Machiners, and Tools for making Augers and Bits, each running seventeen years; dated as follows: Dec. 19, 1885; January 31, 1886, and July 3, 1886. There is a special claim on each of the Dies. All persons in-fringing on said patents will be held responsible to dinging on said patents will be held restonsible the extent of the law. **Russell Jennings.** Deep River, Conn., Sept. 7, 1874.

Wanted—A Partner,

in a foundry and machine business, already well es ablished. Locality splendid and healthy. A practical man with means is wanted to join a practical man who is already well established. oractical man who is already CAR WHEEL FOUNDRY. Address P. O Koz 134, Selma, Alabama.

Briesen's Patent Agency FOR SECURING INVENTIONS, TRADE

MARKS, &c., IN AMERICA AND LUROPE.

No. 258 Broadway, New York. A. V. BRIESEN.

VENTILATING & STEAM HEATING.

A thoroughly competent engineer, with extensive experience in the above line, desires employment.

Office of The Iren Age, 10 Warren St., N. Y.

Special Notices.

A. PURVES & SON.

Scrap Iron & Metals, Machinery, Tools, Shafting & Pulleys, Steam Engines, Pumps & Boilers, Copper, Brass, Tin, Babbit Metals, Foundry Facings. Best Quality Ingot Brass.
Cash paid for alkinds of Metals and Tools.

FRANKLINITE IRON ORE

DIXSON & TROTTER, 35 Spruce St., N. Y. EXPORT TO RUSSIA!

Having established ourselves in this city for the sale of American Machinery, Hardware, Agricultural Implements and Technical Products generally, we beg to solicit correspondence with manufacturers desprous of being represented in Russia. Familiar with the wants of the country, and, as civil engineers, brought in contact with the industrial interests, we are enabled to introduce successfuly American products to the trade.

Address

HARTOCH BROS.,

Address

Kasauska 46, St. Petersburg,

Edson's Steam and Pressure Recording Gauge for Steam or Water.

The inventors of this combined "Pressure Recording Gauge" and "High Pressure Alarm" have, after many years of persistent effort and at great expense, succeeded in perfecting a reliable and accurate mistrument for measuring either air, steam or water, when subjected to pressure, and for denoting the same by a tracing upon Edson's Patent Logs or "Charts." No manufacturer or steam user can afford to be without them. Adopted by the United States Centennial Commission for competitive test at the present Exposition, and has also been used by the American Institute for several, years past as a standard gauge. To be found at the Centennial Exhibition under D 9, column 67, Machinery Hall. Circulars sent on application to Gauge for Steam or Water.

M. B. EDSON, 91 Liberty Street, N. Y NOTICE.

Water Filters

BATTERSEA, LONDON, July 1, 1876. We beg to advise the trade and public that we have a, pointed Mr. II. R. Mensino, 62 Water St., N. Y., sole agent for the sale of our well known Silicated Carbon Water Filters.

SILICATED CARBON FILTER COMPANY.

PIG IRON and ORES. J. F. JAMES, Chattanooga, Tenn. pecial attention given to orders from Southern Foun ries. Advances made on consignments of Pig Meta nd Warehouse receipts given upon arrival in store yard

DROP FORGINGS.

The Trenton Vise & Tool Works, Trenton N. J., having increased their facilities, are now able to do all kinds of Iron and Steel Drop Forgings

n quantities to order at reasonal HERMANN BOKER & CO., Proprietors, 101 & 103 Duane St., N. Y.

for Sale, &c.

For Sale.

Hardware Business in a city of 16,000 to 18,000 inhabitants, near New York, long established, and doing a good business, surrounded by a fine agricultural district. Satisfac-tory reasons given for selling. Address, "HARDWARK,"

Office of The Iron Age, 10 Warren St., N. Y.

For Sale. The entire interest in one of the most salable patented articles in the United States. Also, machinery for manufacturing in large quantities, or will exchange for stock of merchandise in good location. Satisfactory reasons given for selling. None need apply except those who mean business. Address, BOX 65,

Lyons, Iowa.

FOR SALE OR TO RENT. The valuable property known as the **BOONTON**IRON WORKS, situated at Boonton, Morris
Co., New Jersey, now in complete working order.
Also in coanection with the same valuable mining
properties, adjacent to the above, if desired.
Apply to JNO. CROSBY BROWN,
EDWARD C. LORD,
EDWARD C. LORD,
Executors of Estate of J. COUPER LORD,
No. 120 Broadway, N. Y., Room 69, Fourth Floor.

The state of the serious of the partner, the surviving partner is desirous of the points of the partner, the surviving partner is desirous of the points of the partner, the surviving partner is desirous of the points of the partner, the surviving partner is desirous of the partner, and the partner is desirous of the partner is of the partner is desirous of the partner is desi

Near the Lehigh Valley Railroad Depot, Allentown, Pa.

For Sale,

30,000 acres of Iron Ore and Timbered Land, large water powers, furnace and forge producing best quality, at good profit and sale. Accessible to Western and Eastern markets OWNER.

271 N. Charles St., Baltimore, Md.



FOR SALE.

at 10c. a copy, Weekly Spanish
Review and Prices Current. The
undersigned is also a Translator
from and into the English, Spanish,
French and German. Latest
Translations made: for the governments of
Germany and Spain. Pacific Mail S. S. Co., Walter
A. Wood; Morris, Wheeler & Co., Todd & Rafferty;
John T. Dunkin; Fisk & Hatch; R. W. Wilde:
Wilson Sewing Machine Co.; J. Hess & Co. (H. Mar
quard); M. Echeverria & Co., and Chas. E. Little,
New York; Hocking Valley Mg. Co.; W. F. Potts,
Son & Co., Phila; Atlantic and Pacific Land Co.; B.
E. Flemming, Jersey City; Wilder & Co., Savannah,
and the Tanite Co.; Strondsburg ("Emery Grinder").
Abendroth & Root Mg. Co., to whom he relers.

E. Estimates Grunished of translations and

t# Estimates furnished of translations and setting up of Spanish, German and French Catalogues for the Centennial.

C. KIRCHHOPF. Metal Reporter of " The Iron Age,"

Box 2091, New York P. O.

Trade Report.

Office of The Iron Age, Wednesday Evening, Sept. 13, 1876. The past week has been one of more than average activity in general trade, and Wall street has felt the stimulus of an improved tone in the outside markets. The money market has been easy, with rates on call of 11/4 @ 21/4 per cent. With the improvement in trade more business paper is offered for discount, and the quotable rates are 4 @ 6 per cent. for prime.

The gold market has been strong, with a rising tendency. We give below the highest and lowest daily quotations during the past

	Highest.	Lowest.
Thursday		1093s
Friday	110	109%
Saturday		1093
Monday	1103	110
Tuesday		109%
Wednesday	110	109%
G	to home more of the	

with gold, but the old issues have been generally lower. State bonds have been dull and in few and unimportant. little demand. Railroad mortgages have been irregular. Coal road bonds have been weak. We give below the closing quotations of govern-

The Syndicate baving charge of the negotiation of the \$300,000,000 41/2 per cents did not give to the public the exact amount of subscriptions under the offer to sell \$40,000,000 of these bonds. In general terms, however, they gald that the subscriptions amounted to about \$40,000,000; and they requested the Treasury to call in \$10,000,000 more of 5-20s 6 per cents. and advanced the price of the new bonds to 101 gold. The Treasury on Tuesday made a call for \$10,000,000, which makes the total 5-20s called \$30,000,000.

In the stock market the feature of interest In the stock market the feature of interest has been the further decline in coal stocks, D. and H. and D., L. and W. stocks having fallen in sympathy with New Jersey Central, and for precisely the same reasons. Other shares have been tairly steady. The principal dealings have been in D., L. and W., Lake Shore, N. J. Central, Michigan Central, Western Union, Pacific Mail, Milwaukee and St. Paul, D. and H. Canai and Rock Island. The quotations of active shares at the close of business to-day are given below.

The bank statement shows an enlargement of loans of \$2,607,600; the total reserve is \$384,600 higher than last week, while the surplus reserve is \$234,525 less, it amounting to \$22,540, 025. The following is a comparison of the bank averages for the past two weeks:

Dank averages for the second of the second o The following tables show the movement in

foreign trade for the week: IMPORTS.

For the week ended Sept. 9. 1874. 1875. 1876.
Total for week.. \$6,953,507 \$4,380,193 \$4,117,698
Prev. reported. 281,814,056 241,487,726 199,885,904 Since Jan. 1.....\$288,767,563 \$245,867,919 \$204,003,602 Among the imports of general merchandise

were articles valued as follows:	
Quant,	Value.
Brass goods7	\$252
Bronzes21	6,252
Chains22	836
Copper	3,450
Catiery85	23,713
Gas Fixtures2	818
Guns73	5.948
Iron, pig, tons100	1,596
Iron, other, tons3	184
Metal goods	17,709
Nails 1	195
Needles21	7.313
Old metal	6,832
Per. caps1	247
Steel	13,327
Silverware	918
Tin, boxes	93,120
Tin, 300 slabs	1,866
Wire	4,546
EXPORTS EXCLUSIVE OF SPECIE.	
For the week ended Sept. 11:	

1874. 1875. 1876.
Total for week...\$6,953,507 \$4,380,193 \$4,117,698
Prev. reported...\$81,814,056 \$241,487,726 199,885,904 Since Jan 1....\$288,767,563 \$245,867,919 \$204,003.602 EXPORTS OF SPECIE.

For the week ended Sept. 9:

Cotal for the week	A480 00
the state of the s	\$156,000
Previously reported3	9,066,72
Total since Jan. 1, 1876 \$3	0 000 70
Same time in 1875 6	
Same time in 1874 4	
Same time in 1873 4	
Same time in 1872 5	
Government bonds at the close were	stron
with quotations as follows:	
Bid.	Asked
J. S. Currency 6s	127
U. S. 6s 1881, reg 11734	1173
U. S. 6s. 1881. cou	119
J. S. 5-20 1865, reg11234	113
J. S. 5-20 1865, cou	113
J. S. 5-20 1865, new reg1135	1133
J. S. 5-20 1865, con	1133
U. S. 5-20 1867, reg	1163
J. S. 5-20 1867, coa	1163
U. S. 5-20 1868, reg1181/2	118
U. S. 5-20 1868, cou1181/	118
U. S. 10-40 reg1153	115
U. S. 10-40 cou	116
U. S. 5s, 1861, reg1151/4	
	1153

C. D. De, 1004, continued to the contract to t	
The following were the closing quotat	ions of
active shares :	
Bid.	Asked.
	Ziencu.
Atlantic & Pacific R. R. Preferred 11/2	-
Atlantic and Pacific Telegraph 15	
Chicago & Northwestern 87%	37%
" Pref 6234	623%
Chicago, Rock Island and Pacific 105	105%
Chic., Bur. & Quincy1131/2	115
Col., Chic. & Ind. Cent 3%	3%
Cleveland and Pittsburgh 90%	9136
Chicago & Alton 96%	98
Chicago & Alton	_
Consolidation Coal 55	37
Canton 27	31
Dal Lask and Western 743/	7436
Del. Lack. and Western 74%	6536
Delaware & Hudson Canal 65	110
Adams Express	
American Express 591/6	60
United States Express 62	6216
Wells, Fargo & Co. Express 83	84
Eria 956	934
Harlem137	138
Harlem	1134
Illinois Central 851/	8736
Kansas Pacific 5%	61/6
Kansas & Texas 7%	796
Lake Shore 52%	5236
Michigan Central	40%
Morris & Essex 84	85
Milwaukee & St. Paul	3314
Pref 66%	67
	6
	2
" Pref 6	

lew York, New Haven & Hartford 151	
ew York Central 105%	
lew Jersey Central 2814	
phio & Mississippi	
ino de attestesippi 1179	
acific Mail 22 1/2	
Panama	
Pittsburgh & Fort Wayne100%	
Pacific of Missouri 2	
Quicksflver 13	
Pref 177%	
st. L., Kan. City Northern 5%	
" Pref 2774	
Col., Wabash & Western 23	
Jnion Pacific	
mon racine	
Western Union Telegraph 71%	

GENERAL HARDWARE.

Trade continues to improve, and in some departments it is fairly active. We hear complaints of the smallness of the majority of Western orders, but if the hand-to-mouth policy have the objectionable features of requiring more constant attention and more labor in its performance it commends itself to the judgment of prudent and conservative people for the safety which it must insure. The demand from the South and Southwest is exceptionally good this fall, and some handsome orders from these sections have been placed during the week. Values are steady and the changes which have occurred since our last issue are

We have received the following communica

New York, Sept. 14, 1876.

To the Editor of The Iron Age.—Dear Sir:
We have within a few days received many inquiries relating to free delivery of our productions in Chicago, Ill. As all parties interested in this matter are supposed to be subscribers and readers of The Iron Age, permit us to use it as a medium of information to whom it may concern, and say. Our headquarters are in it as a medium of information to whom it may concern, and say: Our headquarters are in New York, and—unless we change our base of operations—we shall not consent to the free delivery of our goods at other points. We purpose to meet competition from every point, and to sell our products to responsible parties who distribute them in considerable quantities, at such prices as will enable them to take the freightage in their own hands.

The Hart, Bliven & Mead Mfg. Co. Charles Bliven, President.

To the Editor of The Iron Age—Dear Sir: Considerable feeling has been manifested by the Western hardware jobbers on account of a circular issued at 120 Lake street, Chicago, Ill., under date of September 1st, by Charles S. Chamberlain. Mr. Chamberlain is not an authorized agent of this company, and I do not understand by his circular that he definitely claims to be. The objectionable feature of his circular is In offering Branford Locks, delivered in Chicago, at current prices in the Eastern cities.

it is my intention to second the efforts of the Western trade to sustain prices and obviate a reduction of the margin of profits, already too

small to be remunerative.

Thomas Kennedy,

President Branford Lock Works.

Branford, Conn., Sept. 13, 1876.

We print below the revised price list for Manila and Sisal Cordage adopted by the manufacturers at their meeting on the 6th instant which shows an advance of 1/2 a cent per pound on the entire list. This list is subject to the usual trade discount :

	PRICES OF CORDAGE, SEPT. 6, 1876.	
	Manila Cordage, sizes above 12 th'd and	cti
j	Hay Rope	44
ı	5-16 in diam) 151/	44
ı	" Cordage holt rone varna 16	44
i	"Cordage, bolt rope yarns	
ı	th'd17	66
١	Manila Whale Lines	44
ı	Tar'd Manila14	4.4
1	Fine Tar'd Manila Lath Yarn	66
1	Sisal Rope, sizes above 12 th'd & Hay Rope 10%	6.6
ĺ	" 12 th'd11	4.6
I	" 6 th'd and 9 th'd11%	44
1	Tar'd Sisal Lath Yarn	66
1	Fine Tar'd Sisal Lath Yarn	9.6
	Russia Hemp Tar'd Cordage	66
ĺ	American Hackled Hemp Tar'd Cordage12	4.6
1	Tar'd American Lath Yarn12	66
ł	Fine Tar'd American Lath Yarn 13%	66
l		- 4
I	The demand for Nails is fair. We quote	at
	unchanged floures viz . 104 to 60d \$2.	10

net. A discount of 10 cents per keg is allowed on lots of 200 kegs and over. The demand for French Window Glass is im

proving, and we quote the same at discount 50 and 15 per cent. on a firm market.

Sargent & Co., No. 37 Chambers street, New York, and New Haven, Conn., have just issued a handsomely illustrated catalogue of Coffin and Casket Trimmings and Cabinet Hardware manufactured by them. The book contains 97 large pages, 83 of which are devoted to illustrations of Coffin Furniture. Of this class of goods a large assortment and many new and elegant designs are shown. to illus trations of Furniture Castors, Chair and Stool Screws, Bedstead Fastenings, Bed Keys, Brass and Wrought Iron Butt Hinges, Escutcheons, Wardrobe Hooks, Hat and Coat Hooks, Serew Hooks in iron and brass, Serew Eves, Picture Nails, Spring Bolts, Cupboard Catches, Gold and Nickel Plated Drop Handles, Drawer Pulls, Tacks, Brads, &c., and Cabinet Locks. This book is accompanied by a price list in pamphlet form, issued under date of September 1st, 1876. They have been appointed sole agents for Leonard, Bailey & Co's "Victor" Planes, which they quote at discount 25 and 10 per cent. The list for "Victor" No. 0, Block Plane, is 75 cents instead of \$1 as

The following circulars explain themselves : Sanderson Brothers & Company, Limited, Darnall Works, Atterciffic Forge, Sheffield, England, Aug. 21, 1876.

Gentlemen: Inasmuch as the founders of our house were the pioneers of the American trade, and were conspicuous among the earliest manufacturers of cast steel after the death of the inventor in 1776, it seems appropriate that we should also be first to accept the logic of events, and transfer the manufacture of English steel to America; we have, therefore, the pleasure to appropriate to appropriate to appropriate to appropriate to appropriate to appropriate the construction of pleasure to announce the organization of Sanderson Brothers Steel Company, an Ameri can company that will continue the business of

tion of the United States and Donata. Canada.
We have also the satisfaction to state that William A. Sweet, Esq., of Syracuse, widely and most favorably known as a thoroughly skilled mechanical engineer, and for his successful inventions and improvements in processes of matufacture, is largely interested in the new company, is a member of the board of directors, and will, as general manager, give the new company the benefit of his valuable experience.

sperience.
The Steel manufacture will be under the sole The Steel manufacture will be under the sole barge of a responsible Steel maker, whose cientific education and careful practical train-ing at our works in Sheffield, thoroughly qual-icy him to reproduce in America the identical tandard qualities and tempers of Sanderson frothers & Co.'s Cast Steel.

Standard qualities and tempers of Sanderson Brothers & Co,'s Cast Steel.

With abundant capital at command, and the best skilled talent in every department, the new company is determined to push this enterprise to a successful result. For the future we propose to confine ourselves to the cultivation of our large home and Continental business, retaining, of course, a very large interest in the American company.

While soliculing for our successors the generous preference we have so long been favored with by old and new friends, and now acknowledged with hearty thanks, we believe that by prompt attention to orders and strict maintenance of the accustomed qualities of our Steel,

nance of the accustomed qualities of our Steel, they will fully prove their claim to the con-tinued confidence of the trade.

Respectfully, Sanderson Bros. & Company, Limited.

SANDERSON BROTHERS STEEL COMPANY, SYRACUSE, N. Y.
16 Cliff street, N. Y., August 24, 1876.
P. O. Box 1308.

DEARSIR: As announced in the accompany ng circular, the above named corporation ha een organized for the purpose of manufactur ng in America Sanderson Brothers & Co.'s re iable Sheffield Steel, and continuing in this country without interruption the long estab ished business of Sanderson Brothers & Co.

lished business of Sanderson Brothers & Co., who will still retain a very large interest.

The new company has purchased from Sanderson Brothers & Co., all their stocks of Steel in America, their good-will, and the exclusive right to use their name, trade-marks, patents, peculiar modes of preparing crucibles, mixtures for melting, methods of manipulating, and all confidential information of whatever kind employed in the Sheffield process of Steel manufacture; and will continue to use the manufacture; and will continue to use the finest brands of genuine Swedish Dannemora Iron for the foundation of Sanderson Brothers

Iron for the foundation of Sanderson Brothers American best Cast Steel.

With the advantages of abundant capital, a competent manager, and skilled workmen practically trained at the works in Sheffield, together with the most approved machinery, the new company combines ample facilities for promptly furnishing the identical, uniform qualities and tempers of steel hitherto supplied from Sheffield.

Soliciting a continuance of your esteemed

attention, I am, respectfully, EDWARD FRITH, Treasurer.

We have received the following notice:

TO THE HARDWARE MANUFACTURERS: Last year at the meeting of the Western Hardware Association, held at Cincinnati, a few manufacturers and their representatives were present and organized a temporary "Manufacturers' Association." Association."
The "Western Hardware Association" was ac-

The "Western Hardware Association" was invited to attend a banquet, which was accepted, and on that occasion a banquet was tendered the members of the Association by the manufacturers, to take place at their next annual meeting, and this meeting will be held in St. Louis, Mo., October 17, 1876.

As this meeting promises to be very important, and one in which the manufacturers are directly interested, it is hoped that every manufacturer of Hardware, and kindred lines, will be represented, and it is desired, as far as pos-

directly interested, it is hoped that every manu-facturer of Hardware, and kindred lines, wil be represented, and it is desired, as far as possible, that the leading or representative mem oer of each firm be present.

All who intend to be there on that occasion

should address "Committee Manufacturers' Association," Lindell Hotel, St. Louis, prior to October 10, giving their names, also the name of their firm. This will facilitate the object in Per committee,
MANUFACTURERS' ASSOCIATION.

In addition to the letters already published on the "Drumming" system, we have received the following:

To the Editor of The Iron Age—Sir: I fully indorse what is said by "Western Jobber" in your issue of August 31st. Among the many pithy sayings of old Doctor Franklin, I remember this one, "There is 10 per cent. difference between will you buy, or will you sell."

This truth was never more fully demonstrated This truth was never more fully demonstrated than by the drumming system. Beyond question, goods are sold 5 to 10 per cent. lower on the road than they would be from the shelves; add to this the salaries and expenses of your travelers, and the profits come out at the "little end of the horn" all the time.

In my humble judgment many of our failures are due to this system, for while the profits case, expenses run on.

profits cease, expenses run on. Western Jobber No. 2.

To the Editor of The Iron Age—Sin: Incommon with hundreds of other retailers lave read with interest the discussion provoked by the recent letter of "Western Jobber." Manufacturers, jobbers, and the traveling fra ernity have, been heard from, and now, cour permission, I will put in my oar as a ctailer. From my standpoint it seems that the whole matter can only be regulated, as all whole matter can only be regulated, as all business affairs are, by treating it simply as a question of dollars and cents. With Ethan Allen, I believe in the "eternal fitness of things," and if in the course of events "W. J's" days of usefulness are waning, so let it be. If Western jobbers' (or any other jobbers') drummers don't pay, why quit them. I think retailers will all agree that one-half of the traveling men can be dispensed with, and no one feel seriously bereaved. At the same time, traveling salesmen are a great convenience one fee seriously bereaved. At the same time, traveling salesmen are a great convenience very frequently, but it is the abuse of a thing that is pernicious. Jobbers also have their sphere, but they must not think they have a lien upon the trade of all the retailers in their field of operations. We are bound to buy as cheaply as we can, and if we can supply ourselves to better advantage from manufacturers' stock, we are going to do it. Those of us who take The Iron Age and kindred papers, and keep ourselves posted, know what goods are worth. The exigencies of the times, sharp competition and limited demand, compel us to use the utmost care in purchasing, and we are

The market for Manufactured Iron and Rails is unchanged.

IRON.

American Pig.-The transactions during the week have been altogether of a retail nature, and no sales of any magnitude are reported. We quote: No. 1 Foundry, \$22; No. 2 Foundry, \$20; Gray Forge, \$19 @ \$20.

Scotch Pig.-Sales of Scotch Iron are limited to small lots for immediate use. During the week 200 tons Coltness for orders and 50 tons Summerlee for export arrived at this port We quote as before: Coltness, \$28 @ \$29; Glengarnock, \$27, and Eglinton, \$26 @ \$26.50.

Rails .- We cannot learn of a single transetion during the week, and continue to quote Iron at Mill \$39 @ \$42.

Old Rails .- We quote Old Rails \$21 @ 22,

Scrap.-We quote Wrought Scrap from vard, \$27 @ \$28.

METALS. Copper.-The feature of the week under

eview has been the purchase of a large lot of comething like 2000 tons, at a figure stated to Field Alfred & Co. Lake Superior Copper for export, amounting to be 19c, or thereabout, directly or indirectly for the French government. Up to this purchase there were exported since January 1 some 12,000,000 pounds, to which will have to be added 5,000,000 pounds yet to follow, which include the above purchase, constituting a grand total of 17,000,000 pounds of ingot Copper. But this is not all, for a large amount of Copper has gone out of the country in the shape of metallic cartridges; it is therefore no exaggeration to insist that at least one-half of the present year's product of the Lake Superior mines is thus absorbed by foreign countries. We are inclined to think that in view of the total absence of speculation, and the partially rom Sheffield.

Soliciting a continuance of your esteemed rders, with assurances of their receiving best tention, I am, respectfully. perhaps exaggerated complaints of our brass consumption during the remainder of the present year does not come up to expectations, it cems to us evident that at its close we shall have a stock left for our domestic purposes barely sufficient to carry us to the opening of next year's Copper campaigu. We have so frequently pointed to this steady export as being a most important feature, that we have now to lay particular stress upon it when it begins to take such extraordinary proportions. The price of 20c. is now firmly insisted upon for available Lake Superior Copper, and f.om now forward there may be a gradual hardening even without the aid of speculation. Baltimore re nominally quote 20c. London is held in check by the impending Wallaroo sale, and quotes, by cable, Chili Bars, £71, and Best Selectd, £76 @ £77. Manufactured remains quiet at 31c. for Sheathing, and 32c. for Bolts and Braziers; Bronze and Yellow Metal Sheathing, 20% c. @ 21c.; and Yellow Metal Bolts, 26c. @ 28c. Tin .- The market here, although not very

active, remains quite firm at the following quotations: Straits, 171/c. @ 171/2c., gold; English Refined, 17c.; ditto Common, 16%c.; and Banca, 1914c.; all gold, large lots. Mail accounts from Europe express more confidence in the immediate future, but the subsequent cable intelligence, on the contrary, betrays great weakness, Straits being down to £70. 10/. At the time when Straits Tin declined to £70, it will be remembered, we gave way to 161/2c., gold; this shows how comparatively well sustained prices are here at present. And this not without a good reason, for there is a falling off in the shipments of Tin from the Straits to the Atlantic States thus far this year of 9000 slabs. The cable informs us that the Straits'shipped this way in August but 200 tons. against 300 in July; the August shipments to England were but 500 tons. Singapore cables \$19, with an exchange of 4.3. We repeat that the European markets will remain quiet till the Netherland Trading Society's sale comes off at the end of this month. Meanwhile we may go on improving here from causes purely local. Tin Plates have also been quite inactive. England is steady. An important change has been made by Phelps, Dodge & Co., in the old established basis on which Tin Plates have hitherto been sold on this coast. We herewith publish their circular on the subject :

PRELPS, DODGE & Co., Cliff street, between John and Fulton, New York, Sept. 4, 1876. DEAR SIR: We have decided to sell 12x12 and

14x20 Plates at same price as 10x14, excepting extra stamping plates 12x12 and 14x20. Russis Iron actual tare in all cases. Yours truly. Phelps, Dodge & Co.

We quote at the close, in gold, per box, large lines, ordinary brands, \$7.25 @ ditto Ternes, \$6.50 @ \$6.75; Coke Tin, \$6.121 @ \$6.25, and Ternes, \$5.75.

Lead .- The market has been somewhat un settled by the extreme readiness with which ome parties having Lead under control have Sanderson Brothers Steel Company, an American company that will continue the business of our present firm in America.

The new company has taken our stocks of steel in the United States, has acquired the right to use our name, trade-marks and goodwill, and will produce precisely the same quill items of steel as we have hitherto done, using the same brands of Swedish rron until American iron shall be found to equal it.

The new corporation has purchased of Swest's

Manufacturing Company the large and centrally situated Geddes Steel Works at Syracuse, N. Y., commanding easy and economical communication by land or water with every portion of the United States and Dominion of Canada.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)

We have also the satisfaction to state that William A. Sweet, Esq., of Syracuse, widely and most favorably known as a thoroughly skilled mechanical engineer, and for his successful inventions and improvements in processes of matufacture, is largely interested in the new company, is a member of the board of the trade.

Ination will help him out. Let him adorn some tastern, with the trade.

RETAILER.

BRITISH IRON MARKET.

(Specially reported by cable for The Iron Age.)

Wednesday, Sept. 13, 1876.

Scotch Pig.—The market is without change, and we repeat quotations:

and we repeat quotations:

Gartsherie No. 1.

Gartsherie No. 1.

Gottness No. 1.

Gottness No. 1.

Gottness No. 1.

Gartsherie No. 1.

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Gartsherie No. 1.

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trade.

Spelter and Zinc.—Nothing of interest has transpired in Domestic Spelter. The demand is as yet slack, and we cannot quote the same over 71/4c, currency, at which it closes not sell readily. Any moment, however, the situation may undergo a favorable change. Copper may be stirred up from its protracted apathy, and as the Brass manufacturers may then prefer to complete their general assortment, Spelter is likely to have the benefit of a similar movement. Foreign remains as inactive as ever at 7c. (@ 73/cc., gold. remains as inactive as ever at 7c. @ 7½c., gold. Nothing of interest has been received in the way of European news. Sheel Zinc.—The market is moderately active, but steady at 8½c. @ 8½c., gold, for Mosselmann, and 9c. @ 9½c., currency, for American.

IMPORTATIONS.

Of Hardware, Iron, Steel and Metals into the Port of New York, for the week ending September 12, 1876 :

Benedict R.
Cases, 2
Bryce Wm. & Co.
Chains, cs., 8
Boker Hermann & Co.
Cases, 4
Casks, 3
Mdsc. pkgs., 1
Gun cass cs. 3 Gun caps, cs., 3 Clark, Wilson & Co. Chains, cks., 7 Corfan W. C. & Co.

Cases, 1
Harris G. E.
Casks, 5
Jackson G. L.
Gun caps, cs., 10
Cartridges, cs., 3
Korne & Curry,
Cases, 2
Lau & Garlichs,
Mdse, pkgs., 1
Moore's J. P. Sons,
Gun caps, cs., 4
Roosevelt Samuel & Chains, cks., 15
Schoverling & Daly,
Mdse, pkgs., 15

Har

Schoverling & Daly, Mdse. pkgs., 4 Tillottson L. G. & Co. Telegraph wire, lots Van Wart & McCoy, Mdse, pkgs., 10 Mdse. pkgs., 10 Wiebusch & Hilger Hwd.

Co. Anvils, 294 Casks, 2 Cases, 6 Iron.

Henry A. T.
Pig, tons, 50
Jackson & Chase,
Tiron, bdls., 22
Leayeraft & Co.
Scrap, lots, 1 Mita

Naylor, Benzon & Co Naylor, Benzon & Co. Bars, 1007 Naylor & Co. Bars, 5032 Order. Sheet, pkgs., 458 Spiegel, kilos, 649 Pig, tons, 200

Fig. tons, 200

Steel.

Allen R. W.
Tres, 24

Haigh J. Lloyd,
Bundles, 45

Wre, bdls, 45

Prosser Thos, & Sons,
Packages, 107

Saxton & Scabury,
Bundles, 27

Cases, 2

Bars, 7

Sanderson Geo, & Co,
Bundles, 26

Voodford W. O. Bundles, 26 Woodford W. O. Cases, 12 Order. Rods, bdls., 279 Bundles, 147

Bars, 3 Packages, 29 Metals. Metals.
Bruce & Cook,
Terne plates, bxs.,
500
Byrne Joseph & Co.
Tin plates, bxs., 1731
Coe & Co.
Brass, bbls., 58
Dickerson, Van Dusen &
Co.

Co.
Tip plates, bxs., 2506
Drexel, Morgan & Co.
Lead, pigs, 972
Figueroa Lead, bars, 874
Naylor & Co.
Tip plates, bxs., 1321
Phelps, Dodge & Co.
Antimony, cks., 75
Tip plates, bxs., 11,687 Black taggers, bxs., Smidth C. C. & Co. Lead, pigs, 2240 Salamon A. H. & Co. Scrap, copper, pcs., 5 Order. Tin, ingots, 596 Tin, plates, bxs., 4478 Tin, slabs, 1021 Without bills of lading. Tin, slabs, 84

OLD METALS, PAPER STOCK, &c.

The sales of Old Metals still continue very ight, and the market is without any activity. There is a better feeling, however, in connection with Wrought Iron, and quotations are more easily obtained. Copper is very dull, and Brass is also in very little request. Lead is a trifle more active, but not sufficiently so to alter prices. The demand for Paper Stock has fallen off considerably since last week, and stocks are abundant on the market. Other articles present no material change. We quote the following as the current purchasing rates :

as the current purchasing rates:

Old Metals.—Copper, 14c. @ 15c. per lb.; Yeilow Metal, 10c.; Brass, 9c.; Composition, heavy, 10c. @ 11c.; Lead, solid, 5½c.; Tea Lead, 5c.; Zinc, 4c.; Pewter, No. 1, 13c.; do., No. 2, 8c. @ 10c.; Spelter, 5½c., Wrought Iron, \$21 per ton; Light do., \$12 per ton; Stove Plate, \$8 per ton; Machinery, do., \$10 per ton; Burnt Iron, \$6 per ton.

Rags, &c.—Canvas, Linen, 4¼c. @ 5¼c.; do. Cotton, No. 1, 5½c.; No. 2, 2½c.; White, No. 1, 5c.; No. 2, 4c.; Colored, do., 2c.; Mixed, Wsolen, 2c. @ 3c.; Soft, do., 5c.; Gunny Bagging, 1½c.; Jute Butts, 1½c. @ 2c.; Kentucky Bagging, 3c.; Book Stock, 3c.; Newspaper Stock, 2½c.; Waste Paper and Scraps, 1½c.; Kentucky Bale Rope, 4c.; Oakur Jann, No. 1, 4¼ @ 5c.; do. No. 2, 3c.; Tarred Shaking, 1c. @ 1½c.; Grass Rope, 2½c.

COAL.

The inquiries for Coal during the present veek, as well as the amount taken, seem to indicate that there will be a considerable increase in the consumption of Coal this fall. Coal is freely taken at the circular prices, and in considerable quantities. Dealers find their customers ready to buy, and in some cases orders come in faster than they can be conveniently filled; as a result, the retailers are stocking up with Coal. The retail prices in this city have fallen anywhere from \$1 to \$1.50 since the auction sale

The market seems to have reached a settle d state, and, except in the lower prices, there eems to be little trace of the auction sale. Manufacturers show an inclination to stock up at the present low prices, and we hear of many manufacturers who are buying in lots of from one to two thousand tons. Even at the very small margins now obtained, large sales would give the market a good tone and insure an abundant supply. The question of a reduc-

It has been reported that adjustments of this kind have been made, but we do not hear of anything definite, and are inclined to doubt the truth of the statement. If such adjustments have been made there have probably been unusual circumstances to justify such a proceeding. Freights are unchanged. Prices remain as quoted last week. The Bituminous trade continues without changes of note. The trade is somewhat depressed, and the Cumberland region shows a considerable decrease of tonnage over last year. Prices are unchanged.

The Lebigh and Wilkesbarre Coal Company quote as follows at Mauch Chunk;

Lump	Furnace	Li	11	n	p	. 1	0	a	۰	0						0	0 0	,	0	1 0	0	0	0	p 1		٥	*	. 1	Ex.
Broken and Egg	Lump																 										٠		8.
Stove	Broken a	ne	1	E	Ø.	P							۰												 				76
Chartmut	Stove																								 		÷		3.
	Chestnut											ĺ		i															2.

The following are the prices of the Lehigh and Wilkesbarre Coal Company at Port

	Lump.	Steamer.	Broken.	E GG	Stove.	Chestnut.
Old Company's Summit. Honey-Brook Lehigh Wilkes-Barre Plymouth Red Ash	3.25	3.25	3.60	3.80	4:00	3.30

The following are the Pennsylvania Coal Company's quotations, as per their circular of the 1st:

Lump, per	ton	of	2240	lbs		. ,	,		. ,							\$3.
Steamer,	0.0		0.6									٠.				3.
Grate,	6.6		4.6					 	۰	 			۰		 	3.5
Egg.	60		8.5		ì					 						8.8
Stove,	6.6		6.6													44
Chestnut,	6.6		6.6					 		 		0				8.6
A. S. S	WOL	ds,	of													

for Pittston Coal, for delivery at Newburgh, during the month of September:

Steam	SE	*	0 1	0 4			0					0	0 1					۰		*		0	0 1	0										0 1			,	20	-6
Grate.			0	0	0 1				0			a	0	0	0	0 1	0 1	0 6	. 0			0	0	0	0	p	. 1				0	0	0	٠	۰		è	9	A
Egg						0							0	0				. 1	0	0	0		0 1							0	0		0					9	12
Stove.											,	ů									0	0	0															8	- 5
Chestn	u	Ł.	. ,					۰		0	, ,								۰			0									n		0 1					8	4
The	0		11	L			Z.		-					4	3				٠,	ml	9				,	.4	P	4	1	94	6	1	٦	10	ā	a	12	7 0	

and Hudson Canal Company for Coal deliverable free on board vessel at Rondout, N. Y .:

Furnace, Lum	o, per ton of	22580	IDS	٠	0	0				0		ì
Steamer, Lump	D **	0.0										
Grate	66	6.6										
Egg	6-6	4.6										
Stove	46	4.6	**									
Chestnut	4.6	64										
CHebenda				•			•	•		۰	۰	

The Philadelphia and Reading circular for Coal free on board at Port Richmond, is as fol-

	Broken.	Egg.	Stove.	No. 1.
Hard white ash	\$3.00	\$3.00	\$3.50	\$8.00
Free burning white	ash. 3 00	3.00	3.20	3.00
Schuylkill red ash		8.10	3.60	8.00
North Franklin red.		4.00	4.00	3.02
Lorberry	4.00	4.00	4.00	8.05
Lykens Valley	4.50	4.20	4.20	8.50
Edward Gulage	r & Co., 1	11 Bro	adway,	quote
Lehigh as follows	, f. o. b.,	at shi	pping p	oints:
Lump				\$4'00
Broken				3.60
Egg				
Stove				4.00

Chestnut..... WYOMING COAL

Freights and Bituminous Coal quas follows:	otation	s are
Cumberland, at Georgetown	83·50 @	\$3.75
West Virginia, at Baltimore	4 50 2	6.00
Kittaning f. o. b., Baltimore	4.25 22	
Newburg Orrel, at "	@	
Despard, at Baltimore	66	4:50
Broad Top, at South Amboy		4.75
Morrisdale, Wigtons	19	4.75
Cunard		4:75
" at Philadelphia	60	3.90
Consolidation Coal Co. f. o. b., George-	69	0.00
town	@	8.65
Consolidation Coal Co. f. o. b., Balti-	-	
more	68	8.75
In barges at New York	@	
Maryland Coal Co. f. o. b., Baltimore	@	4.00

more barges at New York arvland Coal Co. f. o. aryland Coal Co. f. o. FREIGHTS-PR	b., Baltim b., George	etown	. 0	8 3 7 5 5 5 5 4 0 5 8 7
Ponts.	om Elizabethport, Port ohnson, South Amboy, oboken & Wechawk'n.	om Philadelphia,	om Baltimore.	om Georgetown.

Ponts.	From Ellzabe Johnson, Soi Hoboken & V	From Philadel	From Baltimo	From Georget
Augusta, Me				
Albany	****		\$1.72	
Amesbury, Mass	A1.00		2:00	0 + + 0
Bangor, Me	1:00		1.50	\$1.50
Bath, MeBaltimore	1.00	****	1 30	\$1.00
Boston, Mass	90	1:30	1:45	1.60
Bridgeport, Ct	.70	1951	1.40	1:40
Bristol, R. I.	*85			
Bristol, R. I. Cambridgep't, Mass	1.00			
Derby				
Dighton			1.40	1.20
East Cambridge	*1.00	4.00	1111	2:15
Fall River	*80	1.25	1.40	1.40
Hackensack				
Hallowell, Me		0.0.0.0		
Hartford	40		1:20	1.25
Hoboken		****	1:50	1:40
Jersey City	40		1.30	1.25
Lynn, Mass	1.10		1 40	1.40
Middletown	*90			
Mystic				
Newark			1:50	
New Bedford	*85		1:40	1:40
Newburyport	1.10		1.65	1.70
New Haven	155		1:40	1.40
New London	.80		1:40	1.40
Newport	-85			
New York	*40	. 40	1.25	1.30
Norwalk	.40		1.40	
Norwich	-90		1.45	
Pawtucket	-90	0 0 0 0	****	
Philadelphia	-00		*90	1:00
Portland	1.10		1:45	1.50
Portsmouth, N. II	.80	1.25	1:40	1:40
Providence				1:40
Poughkeepsie, N. Y	-90			1.40
Rockland				
Rockport				
Sag Harbor	1:00			1
Salem, Mass	1.00		1.60	1.60
Salisbury Pt., Mass				
Stamford	'65			
Saybrook	'75			
Stonington				

^{* 3}c. per bridge extra. + And Sound Towing. Harbor Freights, 40 cents.

1:45

Varren, R. I.

ymouth.

PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St., PHILADELPHIA, Sept. 12, 1876. The improved feeling noted in our last reort still continues, and although there is no special increase of business, indications are such as to cause a very confident anticipation in regard to the future. In several departments of business, notably the dry goods there is a decided improvement already; the shipping interest is also very active, the exports of last month showing an increase of more than 50 per cent, compared with the corresponding month of last year. The building trade continues active; 496 permits were issued month, and from present indications the Centennial year will probably equal in that line any in the history of the city. The hardware trade have had an active business throughout the week, and though the orders have been comparatively small, they have been continuous, and from all parts of the country stocks are believed to be small, and must therefore be frequently renewed, so that sanguine anticipations are felt in regard the future. The locomotive works, rail mills, and kindred industries, we are sorry to say, show no signs of improvement, and are as flat as they well can be. A large reduction has been made in the number of hands, and a reduction in wages is in contemplation in some of these departments. The Exhibition grows in interest and attraction, and about 350,000

persons paid an admission fee last week. Pig Iron .- A steady business has been pass ing during the week, and there is a decidedly improved feeling manifested among holders. There appears to be a general demand from consumers, and for such lots as they require regular rates are obtained, although it would impossible to place any quantity without submitting to a sharp reduction. We hear of such lots offering at very low prices, but standard brands in lots to suit buyers are salable at full prices. Sales yesterday are reported of 1000 tons of Crane, and previously a similar quantity, same brand, in lots, all at \$22. We are also advised of a sale of 700 tons Glendon Gray Forge at \$22, at furnace, and \$21 for General quotations, however, are about as follows: No. 1 Foundry, \$22 to \$22.50; No. 2 Foundry, \$20 to \$21; Gray Forge, \$19 to \$20. Market steady.

Ores.-Nothing doing; buyers could obtain concessions on quotations. Offerings f. o. b. at Richmond, Va., are as follows Magnetic, \$4; Specular for Bessemer, \$4.50; Selected ditto, 65 to 70 per cent, of Metallic Iron, \$5. At Cleveland, Lake Superior, \$7, and Republic Mine, \$7:50.

Blooms .- There are sellers at the following quotations; market very weak: Charcoal Scrap Blooms, \$47; Charcoal Ore Blooms, \$41 to \$42; Charcoal Billets of superior quality, from \$60 to \$62; and Bars for converting into Steel, made of best Champlain Iron, \$75.

Manufactured Iron.—Business is still generally very quiet; in exceptional cases there is a little more doing, particularly in best brands of Iron, but it is impossible to place any large lots at figures near to our quotations. Some important transactions in plate and tank Iron have been effected during the week, terms not made public, but understood to be at low rates. The feeling is slightly better than last week, but the market is unsettled, and prices very irregular. A reduction in price was made by one of the leading firms some days since, which was followed immediately by all the others, and it is generally thought the present quotation is only nominal. We quote the market dull and unsettled at 2 c. to 2 15c. for Common, and 2-20c, to 2-30c, for Best Refined.

Horseshoe Iron .- There is a fair business doing, and quotations as before, viz., 11/x 3/6 to %, \$70 per ton.

Rails .- Business remains in a very depressed condition, and there is nothing to add to our report of last week, viz. : "No new business, The mills running on old contracts, and anxious to meet buyers." Sales of small lots are made occasionally, and we note a nominal reduction much attention from buyers. \$54 to \$56 for meet sellers' requirements in the matter of payment. They are offered at \$38 to \$41, at mills, on a cash basis or its equivalent.

Old Rails .- Not much doing. Small lots change hands at prices varying from \$22 to \$23, according to quality and delivery. Some buyers claim to have them offered at lower rates, but all the sales we know of are within the above range. It would be difficult, however, to find buyers for any quantity unless at some concession on above rates. We quote \$22 to \$33 as a fair representation of the market

Scrap Iron .- Sales are reported at an inside figure, but choice lots maintain their value, and would sell at quotations. Demand only moderate, offerings in proportion. We quote: Cast, \$16 to \$19; Wrought, \$25 to \$27.

Nails .- No change to report. The demand is moderately active, and price without change, viz., \$3.25, with 25 to 35 cents per keg discount to buyers of large lots.

Tin Plates .- There has been more activity the past week, and sales of some large lots have been made within range of our quotations, which are as follows in United States cur-

Old Metals .- Brass and Copper are weaker. We quote: Heavy Old Copper, 16c. to 16½c.; Light Tinned Copper, 15c.; Copper Bottoms, 14c.; Heavy Red Brass, 13½c.; Light Red Brass, 13c.; Heavy Yellow Brass, 11c.; Light Yellow Brass, 10c.; Heavy Clean Pipe Lead, 6c.; Junk Lead, 51/c.; Tea Lead, Light Paper, 6c.; Tea Lead, Heavy Paper, 5c.; New Zicc Clippings, 41/4e.; Old Sheet Zinc, 4c.; Yellow Brass Turnings, 8c. to 9c.; Red Brass Turnings, 10c. to 11c.; Plumbers' Lead Joints, 61/8c.

PITTSBURGH.

Office of The Iron Age, 14 Fifth Avenue, | PITTSBURGH, Sept. 12, 1876.

light production and an increasing consumption the market is stronger, but prices remain as last quoted: Bituminous Coal Smelted and Coke Irons-No. 1 Foundry, \$25, 4 mos.; No. \$24; Gray Forge, \$21 to \$22.50; White and Mottled, \$18 to \$20; H. R. Charcoal-No. 1 Foundry, \$27 to \$29, 4 mos.; No. 2. \$25 to \$26; No. 3, \$23 to \$24; Cold Blast Car Wheel (Hecla), \$40 to \$45. It is possible that Anthracite Irons may cause a decline in Western foundry grades, but the mills here prefer Western to Eastern Pig, and will pay from one to two dollars more for it.

Manufactured Iron.-There has been a decided improvement in the demand for Finished Irons within the past couple of weeks, the best evidence of which is that the mills are all running, some of them double turn, and the outlook, so far as business is concerned, is improving. River navigation has been resumed, and our manufacturers will have much lower rates of freight to the South and West in consequence—a very important matter, particularly in these days of close shaving. Quotations may be given at 2 c. to 2 25c. rates for Bars, according to size of order.

Nails.-The demand for Nails is also increasing, and the market is in a satisfactory and healthy condition. Unlike the Iron business. there is an absence of cutting of rates, which is very annoying to both maker and jobber, and a fair margin for profit is thereby secured. The indications generally are favorable for a good fall and winter trade, as, in addition to uniformity of prices, stocks both in first and second hands are small. We continue to quote at \$2-25, 60 days, for orders for 200 kegs and upward, and \$2.85, 60 days, for lots less than 200

Horse and Mule Shoes .- There is a fair degree of activity, but no change in prices; 41/2 cents cash for the former, and 51% cents for the

Steel .- There is nothing important to report; business continues fairly active, the mills are all in operation, and there is no particular cause for complaint, excepting that prices are being shaved very close and the margin for profit small.

Scrap .- The demand for both Scrap Iron and Steel continues light, but as the mills are pretty generally in operation an increased trade is looked for. Prices nominal: No. 1 Wrought Scrap, \$25 to \$26, per ton.

Petroleum.-This important interest continues in a healthy condition; business is active, refineries are all busy, many of them sold in price of about \$2 per ton, without attracting ahead, with every indication that this will continue to be the case during the remainder of Steel Rails is named as the quotation at the the year, and, what is equally as important, mills. Iron Ralis are dull also, not so much there is a good margin for profit. Pittsburgh from an absence of demand as the inability to is shipping to the seaboard for export from 4000 to 6000 barrels of refined per day.

> all the Western Window Glass factories start up on the 15th instant. The prospects are considered favorable for an average fall trade. Stock in first hands estimated at 50,000 boxes. Coal.—River navigation has again been resumed, and a large quantity of Coal will be forwarded to the Western and Southern market within the part deve of the coal.

Window Glass .- According to agreement

ROSTON.

kets within the next day or two.

SEPT. 9.—Pig is having a moderate trade, an improvement on the business of the month past, and at rather more uniform prices. A test of the market is the offer of one of our test of the market is the offer of one of our largest founderies to a prominent holder here to relieve him of over 1000 tons No. 1 at \$21.75, cash down, but the offer was refused. A renewal at an advance has not been made. Holders continue to quote from \$21 to \$25 for the various grades. Bar is moving in better spirit, but at exceedingly low prices, the range starting from \$49 and quoting upward according to the schedule offered and the buyer's credit. Common iron is selling at about \$40. Steel is selling to the sleigh men with a little more spirit, as also to agricultural tool people. In machinery a slight concession has quickened the inquiry, but not actually increased sales. which are as follows in United States currency: I. C., 10x14, \$8 to \$8.75; I. X., 10x14, \$10.25 to \$11; Best Charcoal, leaded, 28x20, \$15 to \$15.75; other good brands, \$14.25 to \$14.75; good fair, \$13.75 to \$14.50; Bright Tin, for cans, &c., \$6.87½ to \$7.25; good Bright Tin, do., \$7 to \$7.37½; Coke, leaded, 14x20, \$6.62½ to \$7.25.

Lead.—Foreign Common Pig remains dull and nominal, at 6.75c. to 6.87½c., gold. The stock of Domestic is small, but there is scarcely any inquiry, and the market is nominal at our quotation of 7c. to 7½c., currency. We quote:

We quote American Tool 14c. to 15c.; American Machinery, 8c. to 9½c.; Besse mer Tires, 5½c.; Sweet's Excelsior Tire, 7½c.; English Tool, 15½c., gold. Copper is just a trifle easier this week, quoting at 19c. @ 19½c., with few if any sales. For manufactured we quote: New Sheathing, 31c; Bolts and Braziers, 32c.; Yellow Metal Bolts, 35c.; do. Sheathing, 21c. Lead is still unchanged, the manutacturing companies buying little, being able to get the bulk of their wants from the junk market, where 6½c. to 6½c., cash, is current. We quote: Pig, 7½c. to 7½c. for Domestic; Sheet, 10c.; Pipe, 9½c., currency; Tin Lined Pipe, 16½c.; Bar 100 tons at full for best brands.

Bar, 8%c.; Pipe, 9%c.; and Sheet, 10c., less 10 per cent. discount to the trade.

Shot.—The demand is fair and prices firm. We quote, with 10 per cent. discount, cash in 30 days: Drop Shot in 25 lb. bags, 9%c.; in 5 lb. bags, 10%c.; Buckshot in 5 lb. bags, 10%c.; Bar Lead in 5 oz., ½ lb. and 1 lb. bars, 10%c.; Bar Lead in 5 oz., ½ lb. and 1 lb. bars, 8%c.

Old Metals.—Brass and Copper are weaker.

CINCINNATI.

Mesers. L. R. Hull & Co., under date of Sept. 9, write us as follows: Pro Irox.—During the past week there has been a marked increase in the demand for all grades. It is difficult to say whether this is spasmodic and temporary, or the beginning of a better feeling, the most encouraging feature being that it is not wholly local, but extended over a wide range of buyers. This slight movement has made the scarcity of Hanging Rock Iron more generally apparent, although without materially affecting Charcoal prices. There has been a slight advance in Hanging Rock Stonecoal brands. coal brands.

HOT-BLAST FOUNDRY.

FORGE HONS.

Hanging Rock No. 1, Charcian Witon, \$21.00 @ 21.50—4 mos.

Hanging Rock No. 1, Coke... 21.00 @ 21.50—4 mos.

Virginia, No. 1... 20.50 @ 21.00—4 mos.

Ala, and Tenn., No. 1, Charcian 21.50 @ 21.00—4 mos.

Red Short, No. 1, Coke... 22.200 @ 23.00—4 mos.

Cold Short, No. 1, Stonecoal.. 19.00 @ 20.00—4 mos.

CAR WHEEL AND MALLEABLE.

CHATTANOOGA.

Mr. S. B. Lowe, under date of Sept. 11, reports as follows: There is no change to note in the market other than a firmness at quotations, and lots based upon those quotations are soon taken. Prices are as follows:

COKE.		
No. 1 Foundry, extra	20 50 @ 17:50 @ 15:50 @	21.00 18.50 16.50
HOT BLAST CHARCOAL.		
No. 1 Foundry	18.00 @ 16.03 @	19:50 17:50
COLD BLAST CHARCOAL.		
Car Wheel Metal Forge Metal Cast Scrap, Heavy. per ton, Cast Scrap, Light. "Old Hails " Old Hails " No. 1 Wrought Scrap per Ib. No. 2 Wrought Scrap "	17'00 @ 12'00 @ 8'00 @ 20'00 @ 17'50 @	20°00 15°00 10°00

ST. LOUIS.

Messrs. Spooner & Collins, Iron commission Messrs. SPONER & COLLENS, Fron Commission agents, 409 North Third street, St. Louis, under date of Sept. 7, report the Iron market as follows: Our market remains about the same as last reported. Prices unchanged, though demand seems to be on the increase. We quote same as last: Mo. Stone Coal, No. 1 F'dry. \$25.00 @ 26.00—4 mos.

8.6	64	Gra	v Mill	22.00	(0)	23.00 - 4	mos.
8-5	Charcoal,				a.	24.00-4	mos.
44	66	No. 9	F'dry	22.06	a.	23.00-4	mos.
64	6.6	Grav	Mill	22.00	@	23.00-4	mos.
Ten	a Charcos	I No.	1 F'dry	23.00	@	24.00-4	mos.
6.6	64	No.	2 F'dry	22.00	@ !	23.00-4	mos.
84	44	Gray	Mill	21.00	@ !	22.00-4	mos.
Ten	n. & H. R.	Coke	Iron No. 1		_		
F.	dry			25.00	0	26.00 - 4	mos.
Teni	D. & H. R.	Coke	Iron No. 2		-		
F.	'dry				0	24.00 - 4	mos.
Teni	n. & H. R.	Coke	Iron Gray				
Mi	11					23.00-4	
H H	Charcoa	No.	I Fary	25.00		26.00-4	
H. R	44	No.	2 F'dry	24.00		25-00-4	
H. B	44	Gray	Mill	24.00		25.00-4	
Mass	sillon Iron	. No. 1	1	29.00		31.00-4	
8. 0	hio Am. S	cotch.				26:00-4	
Mo.	Charcoal	Bloom	8			60.00-4	
69	Scrap	46		45.00	@	50.00-4	mos.
Mo.	Charcoal	Ham	mered				
	llets					0.00-4	
	rted Bar I			(0	2% rate	8.
min 1	t Wronght	Scrat	3	-90	On.		

BALTIMORE.

Messrs. Wyerh & Brother, Iron and Steel merchants, 46 and 48 South Charles street, report us the following prices under date of report us the following prices under date of Sept. 12: As noted in our last, trade continues ruing improved, though for the most part values favor the selling interest, and a feeling of more hopeful confidence is certainly abroad, but with unaltered quotations:

AMERICAN REPINED BAR IRON.

Virginia cold blast Charcoai Fig. (according to brand). \$28 00 @ 35 00 (according to brand). \$28 00 @ 35 00 Virginia hot blast Charcoal Pig Irons (according to brand). \$24 00 @ 28 00 Va. hot blast Coke Pig Iron, No. 1 ex. \$24 00 @ 25 00 \\ \frac{1}{11} \text{if if No. 2 ex. } \$22 00 @ 29 00 \\ \frac{1}{12} \text{if if No. 3 ex. } \$19 00 @ 20 00 \\ \frac{1}{12} \text{Virginia Anthracite. No. 1 ex. } \$25 00 @ 25 00 \\ \frac{1}{12} \text{if No. 3 ex. } \$23 00 @ 24 00 \\ \frac{1}{12} \text{if No. 3 ex. } \$23 00 @ 24 00 \\ \frac{1}{12} \text{if No. 3 ex. } \$20 00 \\ \frac{1}{12} \text{200 } \text{200 } \end{cases} Virginia cold blast Charcoal Pla Irons

FOREIGN.

FRANCE.

FRANCE.

(Moniteur des Interets Materiele).

PARIS, August 27, 1876.—Melals.—Articles in this line, if we except Lead and Speiter, have now declined to such a low point that the question may well be put to consumers, notoriously out of stock, whether this is not a fit moment for the replemishment of supplies. One thing is certain, that a sudden termination of the Eastern war would singularly improve the whole aspect of affurs. Confidence would review, and a brisk demand would manifest itself, assisted by the anxiety of dealers, also known to carry but moderate stocks. Some speculation would, no doubt, co-operate, and the firmness of holders would then lead to a material advance, expecially in Copper and Tin. Copper.—The stocks of Chill are by no means large, and as holders are evincing less inclination to sell, the European markets have been generally steaded on the Wallaroo sale. The firmness of our own market has remained unshaken, and we quote, deliverable at Havre: Chill Bars, 195 frances; Common ditto, 190; Ingois, 185; English Touch Cake, 195; and pure Corocoro Ore, 190. Havre has not yet quite recovered from the late depression, and first brands still remain 187;56; good current ditto, 183,75 to 185, and Lote and Urmeneta, 189;50. Marseilles maintains its attitude of steadiness. Red Tokat, 196; small Refined Ingots, 200; Boits, 245; Sheathine, 235; and Villow Metal ditto, 210 to 215. Tin.—Holders are less disposed to accent current rates, especially for large lots. Much will, of course, depend upon the closing statistics of the present month, especially as regards the London stock. While awaiting these developments we are steady here at 195 frances for all sorts. Marseilles has not yet recovered from the low figure of 196 for Strvits. Lead.—There seems to be an insufficient supply in the hands of smeiters in England, and the consequence is a competition between them and Continental dealers, limits some governments are also still in the market. The firmer tone prevailing here has been rather strengthened;

BELGIUM.

BELGIUM.

(Revue Universelle).

Brussels, Aug. 37, 1876.—Iron.—The quictness which has been noticed in the Belgian markets for some time past has not been relieved during the week. On the contrary, there has been less done, and work has been stopped in various quarters. We are suffering in common with other nations, but not from the same causes which paralyze the Iron industry of Germany and England. The labor question is, for the present, solved among us, and the stagnation witnessed here simply arises from a want of private enterorise. The government has done what could be done to promote activity, and we are now awaiting some sign of confidence on the part of private parties. The demand for Ralis for export has elackened considerably, while Sheet Iron has been in tolerably good request. The only competitor we have to contend with in our own market for the moment is Germany. On the other hand, we ourselves are gaining a stronger foothold in England daily. The proposed admittance, duty free, of Luxembourg Pig Iron into Belgium meets with a stort resistance on the part of our government. Coal.—There has been less activity in shipments from the mines, on account of the scarcity of hands, greatly diverted by harvesting operations. The only demand now perceptible is for lean Coal for brick kilns.

GERMANY.

GERMANY.

(Borsenhalle).

Hamburgh, Ang. 28, 1876.—Metals.—We took prine in former reviews to explain that Central Europe has at all times done a large trade with the East down the river Danube, which has been greatly interfered with since the Turkish troubles began, especially since the beginning of last month when hostilities opened. To a moderate extent Mutals have also suffered therefrom. Should the war come to a sadden close it is to be presumed that business would be favorably influenced by the change. There seems to be some prospect now that this may come to pass, hence there is rather a better feeling. Copper has been looking up under a partial y speculative demand. Berlin is firm at 77 to 80 marks for English and Australian. Stettin is well supported at 85 to 93 for English. We are steady here, as follows: Droutheim, 87; Minnesota, 105; and Quince, 92. Tsn.—There is little anxiety shown to operate cree the statistics of the month are published. Berlin quotes English. 80:50 to 81 marks; Common ditto, 77 to 77:50. Bunca is worth here, 84 to 85; English Refined, 83 to 84; and Common ditto, 83 to 84; and Common ditto, 83 to 84; and Common ditto, 83 to 85. Lead.—We have been slightly improving. Berlin quotes Tarnowitz, Hørtz and Saxonian, 20:75 to 21 marks. At Stettin, Spanish still commands the extreme price of 26 to 27, and German 21 to 22. We are inactive here, as follows: German, 22 to 22:50; English, 24 to 24:50; and Sheet, 24:50 to 25. Spelter.—There is great firmness, but a lack of activity, owing to scant supplies, mostly sold abread. Silvesian at Berlin is worth 23 for good qualities; extra ditto, 24. At Stertin, the quotation remains 23 to 33 to 25:50. At Brealau, "Silesian (Borsenhalle).

HOLLAND. (Koch & Vherboom

(Koch & Pherboom).

ROTTERDAM, Ang. 29, 1876.—Tin.—The market still lacks animation; there have transpired a few sals of Banca on auction terms, at 42% to 43 guilders, and deliverable from the next September sale at 43. The weakness exhibited is due to some anxiety manifested by speculative holders compelled to realize. At the close, however, the metal has railled slightly, and 42% is offered in vain. In Billiton, on the spot, some business was transacted at 42%, but subsequently at 42%. Remoter lots affoat cannot be obtained under 42%.

EAST INDIES.

2,000,000 guilders treasury bils on Holland, at eight days' sight, but placed only some 600,000 guilders at par to 1½ per cent. discount. On the 14th they disposed of 1,500,000 at ½ per cent. to 1 per cent. discount. On Singapore bank bills, on demand. 2 28½ guilders per dollar. Coal.—English West Hartley is wanted, and two small cargoes have found buyers to arrive at 27 guilders. Cardiff and North Wates are neglected. Of the latter, two shipments have been realized at 20 guilders: Australian had not been dealt in.

AUSTRALIA.

Brishare (Queensland), June 17, 1876.—In Copper there is little doing. A report is current that some of our rich deposits of this metal are to be worked, but until we get railway extension between the several Copper districts and the shipping, it is hopeless to expect any development of this mineral. As we have no private enterprise amongst us for railway making, the work remains for the government of the colony to accomplish, and it will at last—years hence, maybe—be moved by some political dodge or another. In The everything is very quiet. The quantity forwarded from the Warwick Railway station during the month of April was as follows: Stream Tin, 310 tons; Ingot Tin, 7 tons; total, 317 tons, showing a falling off of over 50 tons on either February or March and over 60 tons less than April, 1875.

Sydney (New South Wales), June 29, 1876.—Iron.

ary or March and over 60 tons less than April, 1875. (Sydney Morning Courier.)

Sydney (New South Wales), June 29, 1876.—Iron.—We have at last begun to soll our Iron ores, and there are now some hundreds of tons of superior pigs being sold readily in our own markets, and as Iron ores of various kinds and good quality are plentiful, and Coal is practically mexicaustible, there is little doubt of the success of Iron now. As to Coal, it exists more or less over thousands of square miles, and at very easily worked depths, the celebrated Wallsend seam, which extends for 15 miles at the least, west and south of Newcastle, being worked at from 150 feet to 200 feet deep; while beneath it two or three other good seams are proved to also exist. In other places seams can be worked by tunnels even, and there are all kinds—steam, gas and household—and now that the new shipping works at Newcastle are nearly really, we shall be able to ship another half million tons easily, in addition to our present output of a million and a quarter annually. We are also blessed with a surplus revenue of over £2,000,000, which will probably be devoted to extending our railways through the great plains of the interior, so as to tap the trade which now follows the rivers down into Victoria and South Australia.

Our English Letter.

Review of the British Iron, Steel, Metal and Hardware Trades.

(From our Regular Correspondent.)

SHEFFIELD, ENG., August 28, 1876. THE IRON TRADE

continues languid in almost every direction. and reports from all the chief centers of the industry speak of the prospects of a recovery as being exceedingly problematical. In Scotland the course of prices is still inclined downward, although in shipping iron the transac tions are yet tolerably regular, and the stock in hand is gradually becoming larger. In Cleveland, and, to some extent throughout Yorkshire and Cumberland, the difficulties of two or three great firms are sources of much anxiety, it being feared that the downfall of another concern, almost equal to Thomas Vaughan & Co., will prove calamitous to several other The bills of this second house have already been returned, and the liabilities are roughly set down at something like half a million sterling. In Lancashire the iron producers are doing very little indeed, and in the Sheffield district, as well as in Derbyshire, the depression remains unrelieved. From South Staffordshire and Worcestershire there are very grave complaints, the manufacturers of ordinary finished iron having no orders in hand. The Shropshire producers are no better off save that a few of them are turning out fair quantities of iron wire, and limited lots of sheets of extra special qualities. The Monmouthshire and South Wales iron-masters are quite as badly off for work as when I had last occasion to write about them, and I hear that the tin plate producers are again indifferently engaged. The only encouraging feature is that in several districts there are fair contracts in hand (just placed) for constructive iron work,

THE FAILURES.

to which I have just made some allusion, have to which I have just made some aitusion, have been the subject of much public and private comment, those which have either occurred or are imminent in the Cleveland district having naturally occupied most attention in consequence of their possible collateral results. The affairs of Thomas Vaughan & Co. have, as far as possible, been put in train under the temporary management of Mr. Edward Williams, who is in all respects a thoroughly capable man for ary management of Mr. Edward Williams, who is in all respects a thoroughly capable man for the post. I shall not at present mention the name of the other great firm which is in trouble, but I may say that it is in a very large way of business. On Thursday the creditors of Mr. J. B. Walker, iron shipbuilder and shipping agent, of Middlesborough and Barrow, met at York and agreed upon liquidation, the liabilities being about £40,000. The creditors of Raylton, Dixon & Co., of Middlesborough, have also met and have accepted a composition of 3 asytton, Dixon & Co., of Middlesborough, have also met and have accepted a composition of 3/ in the pound, the liabilities being £170,610. Another failure, aithough not in the iron trade, is that of Parks Brothers, salt manufacturers, of Winsford, whose debts amount in the aggregate to over £16,000.

SEVERAL MORE SERIOUS FIRES

several More serious firsts
have taken place during the week, in one case
at least resulting in loss of life. This was at
Manchester, where the chemical manufactory
of Carson & Moffat was destroyed, one of the
partners and a young workman perishing in the
flames. At Leeds, the iron foundry of Holroyd,
Horsfield & Co. was for the most part burnt
down, damage to the amount of £6000 being
done. At Wilford, a village near Nottingham,
six houses were consumed, 29 persors being six houses were consumed, 29 persons being rendered homeless. At Hull, the sawing and planing mills of Hutchison & Son were burned down, the damage being roughly estimated at £30,000, and in London 13 ares took place in one day, the most serious of the series being that which raged on the premises of Mr. Malcomber, cabinet maker, Dartmouth Row, Forest Hill.

Chatham, in the hands of the Royal engineers, who have had what is not euphoniously termed a "paraktte" to deal with. The inventor of this machine is a Mr. Simmons, who is a civil engineer, as well as a practical aeronaut. The parakite is stated to be little more than a huge kite, composed of best French cambric, covered with a mixture of bird lime and India rubber. There were several parakites on the ground, and they were tested for their efficacy in raising weights to a given hight. Sundry accidents of a minor character rather hindered the trials, but it was pretty fully and fairly demonstrated that weights of several hundred-weights might be raised to a great hight even by a parakite of 25 square feet of surface.

ANOTHER SUBWAY UNDER THE THAMES. Chatham, in the hands of the Royal engineers

ANOTHER SUBWAY UNDER THE THAMES. ANOTHER SCHWAY UNDER THE THAMES.
Still another pathway is being constructed under old Father Thames! This time between North and South Woolwich. It consists of an iron tube in segments of different lengths, 9 feet high throughout, with a width sufficient to allow of four adults walking abreast. It will be lined with white glazed pantlles, will be thoroughly ventilated, and will be lighted by means of gas. It is being constructed for the convenience of the men employed at St. Katherine's Docks Extensions, who number 3000, the Beckton gas stokers (2000), Henley's rubber and felegraph works, and other places own, the Becken gas stores (2007), hency rubber and telegraph works, and other places on the northern side of the river—altogethen numbering over 8000 workmen. They will be charged one penny each way, or may take out books of tickets at a reduction from that scale of regenerations.

SCOTCH PIG IRON

appeared likely to revive somewhat in the early part of last week, but the improvement was merely temporary, and at the immediately fol-lowing relapse makers' prices became rather weaker. There is no particular alteration to part in any other, respect, early that Councily.

lowing relapse makers' prices became rather weaker. There is no particular alteration to note in any other respect, save that Connal's stores now contain 80,535 tons.

James Watson & Co. say: "The warrant market opened firm on Monday, with business done up to 56/3, casb. Since then, however, the price has drooped to 55/9½, casb; closing buyers, 55/9; sellers, 55/10. Shipments last week were 9711 tons, agairst 11,656 tons in the corresponding week of 1875."

									No. 1.	No. 3.
G. M. B., at	Glasgo	W					 	 	 56.3	£4/8
Gartsherrie,	66						 		64/8	56/6
Coltness.	+6								67/	56/
Summerlee,	0.6									54/6
Langloan,	6.6				 		 		65/	55/
Carnbroe,	6.6									54/6
Calder, at Po	rt Dund	as					 		64/6	55/6
Glengarnock	at Ard	ros	88	n					62.6	56/6
Eginton,	8.6				 		 		56/6	55/6
Dalmellingto	n. "						 	 	56/6	55/
Shotts, at Le										57/
Kinneil at E	o'ness.						 		57/6	54/

Messrs. John E. Swan & Bros., limited, and Messrs. Wm. Colvin & Co.'s quotations are, in some instances, 6d. per ton under the above.

THE TRADES UNIONS

widently believe their mission to be a high one evidently believe their mission to be a high one, judging from the programme just issued for their Congress commencing at Newcastle-on-Tyne on Sept. 18. In the "Parliamentary Programme" are the following: 1. A Bill to amend the Law of Compensation in cases of Accidents, so that workmen or their families may sue an employer in the event of injury or death from accidents due to negligence. 1. A Workshop Regulation Bill for women and children. 3. The extension of the Factory Acts to bleaching and dyeing works. 4. Reform of the Magis-The extension of the Factory Acts to bleaching and dyeing works. 4. Reform of the Magistracy, and the consideration by Parliament of what limit shall be placed upon the summary jurisdiction of magistrates which deprives citizens of the right of trial by jury; also, the mode of appointing unpaid and unqualified magistrates, and the irregularity with which the law is administered by the magistrates. 5. Reform of the Jury Law by lowering the qualification for jurymen, so as to admit a qualification for jurymen, so as to admit a large number of workmen to the discharge of the important duties of jurymen, and thereby the important duties of jurymen, and thereby prevent the necessity of men serving as jurors so frequently, and provide a sum for reasonable expenses. 6. The extension of the Employer and Workman Act, 1875, to English seamen while in British waters. 7. Reform of the Patent Law. 8. Reconstruction of the Small Peualties Act on the principle that imprisonment should only be used as a method of enforcing payment after the failure of all other means and as a last resort. 9. An act to prevent means and as a last resort. 9. An act to prevent "Truck," by making compulsory weekly payments to workmen in the current coin of the "Truck," by making compulsory weekly payments to workmen in the current coin of the realm. As an appendix to the foregoing schedule of parliamentary business there is a list of additional questions set down for discussion, including the following: Representation of labor in Parliament and the best manner to obtain it; co-operation in its relation to trades unions; piecework, overtime and apprenticeships; arbitration and conciliation in trade disputes; the urgent necessity of providing a sufficient staff of efficient and practical inspectors to enforce the various aots relating to the regulation of mines, factories and workshops; and a consideration of the best means of securing the efficiency of all persons taking charge of either engines or boilers. In their appeal to the officers of trade societies and trade councils of the United Kingdom the committee urge that "the unsettled state of the labor market in the leading branches of industry renders it of the greatest importance that the organized trades should make the forth-coming annual gathering even larger and of greater influence than those of the past." coming annual gathering even larger and of greater influence than those of the past."

TRADES OF SHEFFIELD.

The reduction of 20/ per ton in the quotations of the three leading manufacturers of the highest class of Yorkshire iron, which has been the subject of much newspaper paragraphing during the past few days, is not a matter which in any way affects the ordinary iron trade. Tae Lowmoor, Bowling and Kirkstall Forge productions are, as everybody knows, wholly of a special nature, so that the prices obtained for them are no criterion whatever as to the course of the ordinary trading figures. By this drop, however, Lowmoor and the other similar iron becomes £30 per ton for all sorts of bars, ecomes £20 per ton for all sorts of bars becomes £30 per ton for all sorts of bars, whether squares, flats or rounds; boiler plates, up to 2½ cwt. each piate, £34 per ton; sheets between 11 and 17 b. w. g., £36; per ton; welding tube strips up to 10 w. g., £36; and T iron not exceeding 10 united inches, £24 per ton. In common and medium iron there is no change whatever, a low class of bars being obtainable at some local works at £6, 12/6; good common at £7 to £7, 10/; ordinary at £8, and fair medium £9, or J. B., £9, 10/. The merchants are still doing next to no business in these qualities.

Forest Hill.

THE WEEK'S EXPLOSIONS

have again been few and, fortunately, not very disastrous. I select a couple for your edification. At the York theater a bag of oxyhydrogen gas exploded with a great noise during the performances, injuring a stage carpenter very badly. "All the world's a stage," I suppose, but, thank goodness, we are not all stage earpenters. In the second case, a boiler exploded at the eviliery of the Flemington Coal Company, Cambusiang, Scotland. Portions of the boiler were hurled on the line of the Cale boiler were hurled on the line of the Cale donian Railway, 2000 yards away, which was thus blocked. A row of houses was partly demoilshed, and a man in one of them sustained what are described as "shocking injuries."

EXPERIMENTS IN FLYING

have been the order of the past few days at private shipbuilding firms, are beginning to en-Pig iron has been tolerably quiet during the reek, the only transactions of which I have

tertain a decided preference for ship plates of mild steel, as compared with ordinary from plates, there being at present no very considerable difference in the prices.

The annuel report of Samuel Fox & Co., Limited, is a document which must be regarded with especial interest in these dull times, inasmuch as it shows a good profit on the year's working, the amount so cleared being £28,000, making, with a balance brought forward from last year, £43,219 available for dividend at the rate of 10 per cent. per annum, leaving £19,219 to be carried to a reserve fund, which will then amount to £33,219. The period—five years—of the guaranteed dividend has now expired, but the directors report that in that time the goodwill of £40,000 has been paid off, beside the full dividends, in addition to leaving the amount above named to the credit of the reserve fund. The capital of the company is £240,000.

The directors of the Sheffield Force and

£240,000. The directors of the Sheffield Forge and Rolling Mills Company, Limited, say that the extreme depression of trade has affected the operations of the company during the year sethat the profit made has only amounted to £1082, out of which no dividend is recommended. The directors of Robert Cook & Co., Limited, also allude to the bad state of trade, and report that the accounts show a consider Limited, also allude to the bad state of trade, and report that the accounts show a considerable loss upon the year's trading. The director's of Ryland's Electro-plating Company, Limited, report that sufficient profit has been made to pay the guaranteed dividend of 12½ per cent., orders having been plentiful, all though not so remunerative as formerly. The directors of Henry Wilkinson & Co., Limited, silver and electro-platers, report a profit on the year's transactions sufficient to pay a dividend of 6 per cent., and leave a small balance forward.

ward The cutlery manufacturers are not a whit better employed, but there is a clear improved ment in the demand for files, and also for electro-plated goods.

AN UNSUCCESSFUL MINERS' COLLIERY. It has long been reported that the Shirland Colliery of the South Yorkshire Miners' Association has been anything but a success or ource of revenue to the shareholders, and that the same has been prefet fully and wiew appears to have been pretty fully and finally confirmed at a largely attended meeting of those interested in the venture held at Shef of those interested in the venture held at Shef-field on Tuesday afternoon. Mr. Alderman Moore, the chairman of the directors, presided, and Mr. Holmes, of Methley, the managing di-rector, read a voluminous report on the colliery, and the expedients necessary to be resorted to if the pit were to be worked successfully. I am given to understand, on excellent authority, that something like £100,000 was mentioned as the sum needed, either for the purpose of sinkthat something like £100,000 was mentioned as the sum needed, either for the purpose of sinking a uew shaft, or to drive a long drift through an existing "fault," so as to reach the upper edge of the coal. As I understand the matter, the existing workings are on what the miners call the "bassett" or lower side of the seam, so that the water is continually running into the workings, which would not have been the case if the upper side had been commenced with. The pit was bought by the Association a couple of years ago for about £75,000, and has ever since been a bone of contention and source of trouble to the officials of the union. The meeting lasted several hours, and it was The meeting lasted several hours, and it was stated that unless more money could be stated that unless more money could be raised the pit must stop. It was suggested that if all the lodges of the Association would subscribe 6d. per member per week, that would yield £500 weekly, which would enable the collery to pay its expenses; or if coal advanced sufficiently, that also would enable them to keep going without losing more money. Ultimately the meeting was adjourned in order to allow of the debenture holders being consulted before anything further is done. There is, I may say, very little chance of the money being raised as very little chance of the money being raised, a the Miners' Association itself is in a most tho oughly disorganized state.

BIRMINGHAM AND STAFFORDSHIRE.

BIRMINGHAM AND STAFFORDSHIRE.

There is reported to be a rather better call for pig iron for Germany in South Staffordshire, but trade remains so generally dull that Lord Dudley and Messrs. Addenbrooke have each blown out a large furnace during the week. Native cold blast is £5. 10/; hot blast, £4. 10/; clader pig, £2. 12/6. In sheets, nailrods, girders, piliars, &c., there is more business doing, particularly in the constructive qualities, the house building trades being still very brisk. Marked bers remain at £8. 10/ to £9. 12/6, but a good lot unmarked bars is being sold at £7 at the works. Sneets are £9 to £10 for ordinary, up to £19 for best. Most of the hardware industries are quiet, but in the gas tube and chandeller trades the approach of winter is causing rather greater activity. Other leading branches are duller than hitherto.

NANTYGLO AND BLAINA IRON WORKS.

This concern appears to be still in hot water, judging from what was stated at a special meeting held in Manchester the other day by Mr. Hugh Mason, one of the directors. Mr. Mason stated that in 1873, when he joined the board, coal was 200 per cent, and tin at least 100 per cent, higher than now. At that time they were only selling 10,000 tons of coal per quarter, whereas now they were selling at the rate of 300,000 tons yearly. Serious losses had arisen through the American and Russian iron markets being closed to them for iron, and the through the American and Russian iron mar-kets being closed to them for iron, and the home railways were hardly likely to spend much capital for some time to come, so that he thought there was no chance of any immediate improvement in the iron trade. Their own prospects were so dull that, of seven directors, only three remained, and even they (bimself included) wanted to resign at once!

WALES AND MONMOUTHSHIRE.

The reports from these two districts are not The reports from these two districts are not very hopeful nor are they very comprehensive, inasmuch as it appears to be an established fact that there is "no news" to report. It is stated, however, that the coal trade is everywhere being excessively developed, to such an extent, indeed, that Cardiff alone sent off about 90,000 tons, foreign ports only, last week. The iron works, on the other hand, are still very badly supplied with orders. At Ebbw Vale, the forge is stopped, and at Dowlais the production is going into stock. Altogether Wales and Monmouthabire combined only sent off about 5000 tons of iron and steel last week. about 5000 tons of iron and steel last week.

THE METAL MARKETS

were steady during last week, but closed dewere steady during last week, but closed decidedly firmer, copper being in strong demand and dearer at £71 for good ordinary Chill bars, and £77 for Wallaroo (scarce), sellers in both cases being shy. Tim closed steadily at £72 for Straits; sellers, 10/ more. Australian tin changed hands in small lots at £72, and Spelter at £23. Lead is rather quiet at £31. 15/ to £22 per ton.

per ton.

The Liverpool prices are practically un-

Copper: Delivered in Liverpool, per to | L | S. | Bolt and Sheathing | L | S. | Bolt and Sheathing | S4 | 0 | Tile | 76 | 0 | Tough cake | 75 | 0 | d. £ 0 @ 0 0 @ 0 0 @ 0 0 @ 0

Some of Peter Cooper's Inventions.

In conversation with a reporter a few days ngo, Mr. Peter Cooper gave the following account of some of his inventions and experinents : "Fifty-three years ago, a year before the water was let into the Erie Canal, it occured to me that canal boats might be propelled by the force of water drawn from a higher level, and made to move a series of endless chains along the course of the canal. So I began to make experiments. I built a flat bottomed scow, took a couple of men, and choosing that part of the East River that lies between what is now the foot of Eighth street and where Bellevue Hospital now stands-a distance of one mile -I drove posts into the mud 10) feet apart. On these posts I fastened rollers made of block tin and zine, on which my endless chain could run. There were two rollers on each post, one above the other, so that the chain could run up on one roller and back on the other. Then I made two miles of chain. Here is a piece of it now.

The old gentleman took from the drawer three or four links of the chain, rusty with age. They were of large iron wire, each link about five inches long, rudely twisted together, some thing like a surveyor's chain.

"This chain is of four-horse power," contined Mr. Cooper. "I tested it. I then arranged water-wheel to run the chain. This preparation took a deal of time, for I did most of the work myself. When it was completed, I took a small skiff, fastened my tow line to the chain started my wheel and found that the experiment was a success. I invited Gov. Clinton and a few other gentlemen to make a trip. We ran the two miles, up and back, in eleven minutes. The Governor was so well pleased that he offered me \$800 for the use of the patent on the canal."

"Was it ever used on the canal?"

"Never, and for this reason: Gov. Clinton had great difficulty in getting the farmers on the line of the canal to give him the right of way, and in order to induce them to grant it had held out to them the great advantages that would arise to them of selling their oats, corn, and other produce to the canal men for the use of the horses. If the endless chain was used these promises would be good for nothing, as there would be no horses to feed. So Gov. Clinton gave up my scheme. I ran the chain on the river for ten days, during which time hundreds of people made the trip, but I don't remember that I charged any one a cent for the ride. At the end of that time I took the chain off the river. Well, the matter stood still until a few years ago Mr. Weltch, the president of the Camden and Amboy Canal Company, hit upon the endless chain plan for getting his boats through the locks. He tried it, and it worked well. So he went to Washington to take out a patent, and found on searching the records that I had taken out a patent on the very same invention fifty years before. Of course my patent had run out, so the invention was free to all. That's the whole story of the endless chain matter."

"But you have made other inventions, have

you not, Mr. Cooper ?"

The old gentleman smiled benignantly as he answered: "A great many. More than I have time to remember Ever since I began to work I have been inventing. You see I learned three trades when I was a boy. My father was a hatter, and I learned to make every different part of a hat. Then he owned a brewery, and I learned the mysteries of making ale. Then I was apprenticed to a coachmaker, and learned that trade. I used to spend my evenings when an apprentice in working for myself. My grandmother, who had a little property on Broadway, gave me a room up in her house, and when other boys of my age were out in the streets in the night ruining themselves, I was working in my little room. It was at this time that I made my model for a ferry boat to run by compressed air. I made two long cylinders, pointed at the ends, and on these laid the deck of the vessel. I proposed having a large reservoir on with reference to the size, shape and character the shore at Fulton Ferry of compressed air. This was to be let into of a flexible tube, and from the cylinders used as steam is now to run the machinery. That was before the days of steam. Robert Fulton was then working at his steamboat, and came to see my model. But nothing ever came of it. I've got the old model up in my garret somewhere, now, what there is left of it." "But how were you going to compress the

air at the ferry, Mr. Cooper ?"

using the tides. There used to be a tremendous is best to retain this form throughout as much current at the ferry. There were rocks project- of the length as possible, whatever they form ing out there, and the tide ran so strong that it at its juncture with the casting. There are was impossible to get a boat across there. They would have to go down and get into the eddy along shore and then come up. I proposed should not be deviated from, if at all possible. building a house out over these rocks and have a large wheel to be moved by the current. I proposed having machinery in the house which could raise or lower the wheel, so the buckets would always be the same depth in the water; or the wheel could be lifted entirely from the water when there was ice in the river. With good many things-among others, compress the air to run my ferry boat."

orifice, I am not prepared just now, through lack of sufficient experimental data. As iron " I have read that you once invented a loco-

motive."

"Mr. Latrobe, the old attorney of the Baltithe Baltimore and Ohio Railroad had been commenced, and promised to be a success. On the pounds, it is at once apparent that the

what was known as the Canton property, near Baltimore, expecting the railroad would make it valuable. But the railroad came to a standstill. They found that they had to run around 125 and 200 feet curves, and up hills 18 feet to the mile. Engineers in England said no loco-

strength of this, I, with two others, bought

motive could do it : that a 900 feet curve was the least possible. The company were disheartened. Our property bid fair to be worthless. said: 'Don't abandon the road. I have a little engine up in New York that I think will do the work.' I got the engine. The cylinder was only 314 inch bore; the piston had only a 14 inch stroke, and the boiler wasn't much larger than a barrel. I had great trouble in rigging it up. I fixed it in the cheapest and quickest way possible, just to make the experiment. One Saturday I was ready. I expected to make the trial on Monday, but on Sunday some scamps twisted off the copper pipes. I fixed these up, and at length was ready. There was one rude car, and on the platform of my locomotive were the wood and water, and five gentlemen beside myself. I ran the engine. The coach held the directors of the road. I think there were 36 people in all on board. We ran the thirteen miles up the grade in one hour and twelve minutes. We came back in fifty-seven minutes. The directors were pleased and reassured. They went on with the construction of the road, and now you know what the Baltimore and Ohio Road is. This Canton property was well wooded, and I found a valuable iron mine on it. So I hired men to dig the ore, cut the trees, make charcoal and I started blast furnaces there. And now the great Canton Iron Works are there, which are known all over the country. By the way, the name Canton has a peculiar origin. The man from whom I bought the land made his money in Canton, China, married there, and came to Baltimore to reside, and called his residence Canton. So it has always borne the name. I sold it to two

Boston men." "One of my inventions," said Mr. Cooper, aughing, "is hardly worth mentioning, but I'll tell you. When I was first married we did not have as many servants as we have now. My wife did the work : and after our first child was born, I used to find her rocking the cradle when I came home from work. I used to baste to relieve her: and while I was rocking the cradle it occurred to me that the cradle ought to rock itself. I went right to work and made one of the prettiest cradles you ever saw. A rachet wheel and a heavy weight caused it to rock. Everybody admired the cradle. A Yankee peddler came along one day, and was so pleased with it that he gave me all his goods, and his horse and wagon beside, for the right to sell it in Connecticut and Massachusetts.

Gating Castings.

BY ALFRED E. WATKINS, M. E.

It is the practice in many foundries to pay little or no attention to the proper arrangement of gates, sprues or rising heads, upon which the attainment of sound castings so much depends. Some little light upon this subject is the object of the present paper, and if ever so little information be thereby gained by those following a profession, about which there is so great a dearth in professional literature, the end of the writer will be attained.

GATES.

Ic shop nomenclature, all the passages leadng the fluid metal into the mold are called 'gates," each of which, however, has its own peculiar name, hence, the large opening into which the metal is first poured is termed pouring gate. The recess below, or in connection with the pouring gate, for skimming the iron, is termed a skimming gate; the little passages from the skimming gate to the mold are sprue gates, usually "sprues" only; those openings by which the supply of iron is kept up after the casting is poured, are feeding gates, etc.

The form, size, number and proper arrangement of either or all of these have a decided effect, one way or another, upon the soundness and cleanness of the casting to which they appertain, and should be located and dimensioned of the work in hand.

The pouring gate being the principal entrance for the iron, we will discuss its merits first. When locating this, it must be so placed as to admit the metal to all parts of the mold at the same time: hence its position must be central, or as near central as the nature of the work will permit.

Its cross section should be circular, for the reason that this form presents the least re-"That was another of my ideas. I proposed frigerating surface for a given area; hence it cases where this form cannot be retained, especially in some classes of loam work; still, it Narrow flat gates are of the worst possible The proper diameter for gates of this class

should bear a certain ratio to the refrigerating surface of the mold. If they be too small, the casting will suffer; if too large, unless intended as skimmers, there is a useless expenditure the force from this wheel I proposed to do a of iron. To lay down an exact formula for this in its melted state is but a fluid, it will necessarily follow the laws governing fluids; hence the usual formula for ascertaining the diameter more and Ohio Railroad, says that I built the of pipes for a given discharge will answer in first locomotive ever made in the United States. this case also. A constant must, however, be I did not know until recently that it was the included for each square foot of mold area, first. That was in the fall of 1829. You see, or cooling surface, for in the case of a stove plate and a ball, each weighing 100

stove plate requires a much larger gate area than the ball, or the metal would be so much impeded by its friction through the passage as to lose its heat, and run thick over the extensive surface presented by the one over that of the other. For small castings probably little attention would be paid to formulæ if they did exist, but in castings of large sizes—loam work especially—its convenience would become at once apparent. SKIMMING GATES.

For some classes of work it becomes necesgary to be particular that none but clean iron enters the mold; to attain this end skimming gates are employed. The forms of these are various, yet, when the molder once understands the principle of their operation, his judgment and inventive genius will at once enable him to design any style that would be most likely to meet his particular case. The principles usual ly employed are those of specific gravity and centrifugal force.

To attain the end by employing the specific gravity principle, the pouring gate is made of much larger area than would be necessary if it were to be employed as a pouring gate only the orifice at the juncture with the mold is not, however, increased above that required for the ordinary pouring gate; the metal having filled the gate, the small orifice into the mold throttles down the flow, allowing time for the lighter material to separate from the iron, and ascend to the surface of the gate, where it will be found after the casting is poured.

The centrifugal force principle is employed by forming a chamber between the mold and pouring gate, to both of which it is connected by small channels or "sprues." The shape of this chamber and arrangement of the spruce accomplish the whole end.

In one manner of employing this principle, the chamber, or skimming gate, is formed by molding a ball, equally in both cope and drag; the sprue from the pouring gate is then led into it at a tangent to the outer edge or circumfer ence, the sprue to the mold is taken out radially from the axis (it is best to take the sprue to the mold out just back of the sprue from the pouring gate, that the iron may travel around as much of the chamber before it is drawn off, as possible). It becomes at once apparent that the metal entering from the pouring gate is thrown violently against the walls of the chamber, which, from its shape imparts a rotary motion thereto, and the constant supply of metal causes the iron to take upon itself a rapid spinning motion, whereby the heavier body (iron) is thrown to the outside, where it is drawn off by the sprue, and the lighter body (dross) is forced to the center, where it revolves about the central axis.

It is, of course, necessary that all the sprues to the mold be taken out of the drag side of the flask, while those from the pouring-gate may be either in drag or cope. It is not neces-sary to lead only one sprue from the chamber to the mold-a number may be employed if the nature of the work require it. It is essential, however, to have the sprues to the mold of less area than those from the pouring gate, that they may act as a check upon the fluid iron, and give time for the foreign matter to separ

FEEDING GATES.

These are employed in large castings for the purpose of supplying iron taken up by the casting in shrinking. Their best position is undoubtedly over some thin portion of the casting likely to be injured by the shrinkage strains, because the hot iron being supplied to that point the longest will enable the strains caused by the rest of the mass in cooling to adjust themselves without injury to the weaker part.

More than one feeding gate to a casting is not necessary. I have noticed in some cases these gates strung along in a row like sentinels. This is all wrong, for the reason that for every gate added the feed is correspondingly slow, and the orifice more likely to chill up. cure a clean gate it is necessary for the feed to be rapid, necessitating the constant supply of fresh hot iron. If, however, two gates be employed, the feed is only half as fast as with one, and the opening will chill up in half the time. If three gates be used the feed in each will be [reduced to one-third, and the difficulty of keeping the to one-third, and the difficulty of keeping the gates open will be enhanced three times, and so on for each additional gate, and when the gates are knocked off a blemish in the form of a shrinkage hole will be found at the root of each, owing to the chilling up of the gate before all the shrinkage had been supplied. This will not be so when one gate is used, for the reason that the gate remains open till the last possible shrinkage takes place, and there is no further tendency to strain after the gate has chilled. If a blemish of this sort does occur with one gate it is because the feeding has not been properly attended to, and the metal allowed to get so cool before the hot iron was added that the end in view was defeated.

SHRINKAGE HOLES.

SHRINKAGE HOLES. SHRINKAGE HOLES.

These usually occur beneath gates, and are explained by the walls of the gates chilling the mass contained therein before the mass of the casting had ceased shrinking. As the gate chilled from the sides and top it may be likened to a capped pillar, the central part strained away. The top of the gate being exposed to the atmosphere it will chill most repidly from the top toward the bottom, therefore the softest mass will be that nearest the replay from the top toward the bottom, therefore the softest mass will be that nearest the casting, and that part that will supply the shrinkage required by the casting; hence a cavity is the result.—Engineering and Mining Journal.

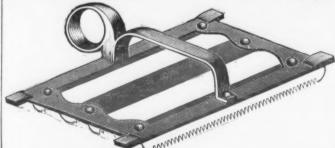
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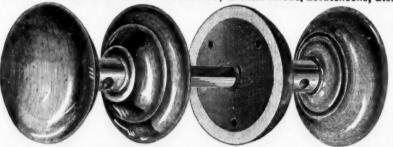
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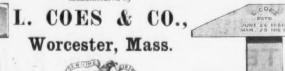
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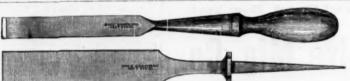
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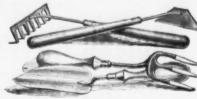


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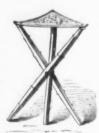
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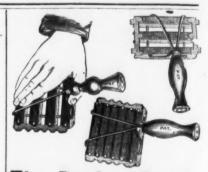
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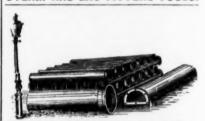
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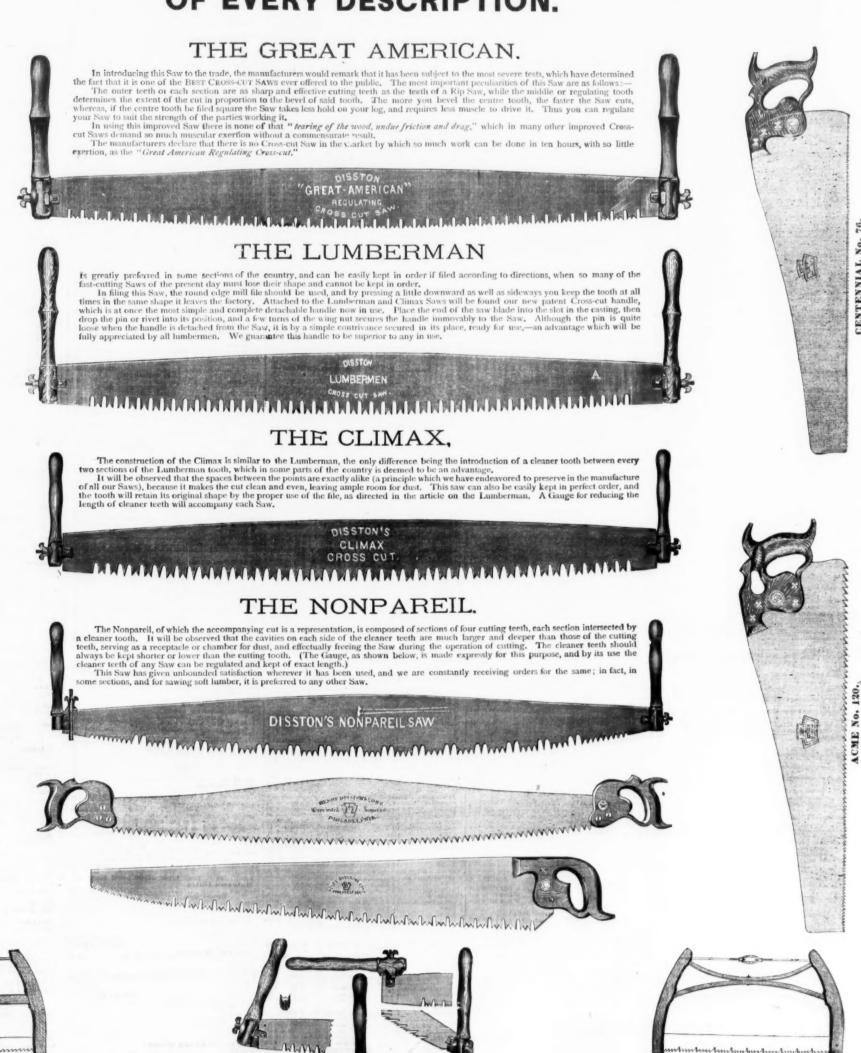
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	Butts- Wrought Brass. dis 30 5	Partie Waren	Bluese.	
HARDWARE.	Cast Brass dis 20 common Cast, wer Drilled. dis 30 common Cast, wer Drilled. dis 30 common Cast, were Drilled.	Ratchet, Weston's dis 20 % Moore's Triple Action dis 20 % S	Hanges. F doz \$6:25-dis 60&10 9	Bailey's "Victor". Defiance Adjustable. D. R. Barron Tool Co Plane 1rons, Butcher's
Wright's. Whose Hole 20 ft gold 10%c; over 250 %s 11c, gold	Broad	Drill Chucks. Danbury each \$8'00, dis 30 % Morse's Beach Patent dis 30 % "Adjustableeach \$10'00, dis 30 %	" Raised	Buck Bros. Bailey's Pate Auburn Tool Greenfield To
Contract American	Parliamen: Butts & Mayer's Hinges	Dover	Heavy Welded Hook 18 to 12 in., 11 c dle 30 @	Plane Irons, Defiance D, R. Barton Middletown Ohio Tool Co
A pple Parers. Oc. Lestic. Furn Table. Lightning. Eudson's Reading. \$750 \(\pi\) dos	Fast Joint, Narrow	National	Screw Hook and Eve net	8 Sanduaky To
Skeleton Paring, Coring and Slicing \$3 00 \P doz net	Fast Joint, Narrow	National	Hoes.	Pliers and Nippers. Button's Patent. Hull's Patent Nippers. No Leach's Patent Wire Cutt
Ash Sifters	Acorns dis 40&10 % " Acorns dis 50&10 % " Japanned dis 50&10 % " Pated Tips dis 45&10 %	Enameled and Tinned Ware. Kettles	Grub. dis 25 \$\frac{1}{2} Planters dis 15 @ 20 \$\frac{1}{2} Covili Pattern dis 16 @ 15 @ 15 \$\frac{1}{2} Covili Pattern dis 15 @ 15 \$\frac{1}{2} Covili Fattern dis 15 \$\frac{1}{2} Covili dis 15 \$\fra	Gas Pilers and Nipper Eureka Pilers and Nipper Plumbs and Levels.
Square per doz \$2.50 dis 20 % A wagers and #815s. Conn. Valley Mfg. Co Pouglass.	Union Mig. Co.'s Fancy Butts.— Figured Enameted Loose Joint	Control Cont	Bird Cagedis 00&10 @ 70&10 %	Plumbs and Levels. Stanley K. & L. Co.'s Pat. Non Chapin's. Standard Rule Co.'s New. Standard Rule Co.'s Non.
Ives: Beecher (French,Swift&Co) Griswolddis 40&10 3	Loose Pin, no Acorn	Brass Inread dis cost	Belt. dis 60&10 % Bench—Hotchkiss' \$5 00 \$ doz. dis 10 % "Weston's No. 1, \$8'00; No. 2, \$7'00 per doz net	Pocket Levels. Johnson's Patent Adjusta Davis' Patent.
Cook (new list)	## Broad dis 40&10 \$ Loose Joint, Broad dis 40&10 \$ Table Butts, Back Flaps, &c dis 25&10 \$	Fancets dis 50 g	" Skinner's per doz \$6.25, dis 20 \$ Clothes Line, Hart's list dis 6 &10&5&10 \$ " Sargent's list dis 6 0&10&10 \$	Pulleys. Judd's Axle. Hot House and Tackle. Jap'd Screw. Brass Screw
1. wis Single Twist Bits	Light dis 40&10 & Loose Pin, Wrt dis 40&10 & Am. Spiral Spring Butt Co list May 1st dis 25 &	Files. Side Co., Self-Measuring	Bird Cage	Jap'd Side. Clothes Line
Beecher (French, Swift&CO) sit quality dis 40&10 \$\frac{1}{2}\$ Griswold Notices Mfg. Co. Cook's (new list)	Light dis 400c10 5	Arcade File Works. \$500 to £ currency Auburn File Works. \$500 to £ currency Nicholson. new list, Jan. 1, 1875, dis 7% %	Cost and risk, Hart's list discontinuous and risk discontinuous and Staples discontinuous and St	Douglas Cistern, etc S. & F. Union Mfg. Co's. Cistern
Hollow Augers, Douglass'	** Shepard dis 70&10 \$ ** Lull & Porter dis 60 \$ ** Nicholson dis 45&10 \$	Heller & Bros \$5 00 to £ currency Hiscox File Mfg. Co. \$5 00 to £ currency, dis 10 % Johnson & Bro. \$5 00 to £ currency	Wire Screw Hooks and Eyes. dia 60&10&10 & 10 & 10 & 10 & 10 & 10 & 10	Punches, Belt or Drive
Universal Expansive, each \$4.50—dis 40.5	Clark's, Nos. 1, 3 and 5dis 70&10 % Ctark's No. 30	Stubs'	Horse Nails. Nos. 5 6 7 8 9 10	Leach's Patent
Universal Expansive, each \$4 \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Nos. 2 4.4%, 6, 8, 10	Stube Butcher's. 4 50 to £ gold Walter Spencer & Co.'s." Diamond 4 50 to £ gold Walter Spencer & Co.'s." Diamond 4 50 to £ gold Walter Spencer & Gold & Gold W. K. & C. Peace's." Imperial 5 22 to £ gold W. K. & C. Peace's.	" P't'd & Pol'd. " Sie 28e 26e 25e 24e 25e 27e 28e 26e 27e 28e 26e 27e 28e 28e 26e 27e 28e 28e 28e 28e 28e 28e 28e 28e 28e 28	Ration Wrought Brain Door, Wrought Brain Door, 1/2, 1/2 and 1/2 for N. E. Hang
Douglass' dis 25&10 5 I vee' dis 30 5 Morse's Bit Stock Drills, List of Jan'y 1, 76 dis 25 5	American	## On the State of	Nos. 5	Cast Steel.
MOTEC 8 DI SUCES. MILE AUGETS	Sprague s	"Philo Sheffield," P. T. Co. 5 00 to £ gold Limet& Co. (French). 4 25 to £ gold Fluting Machines.	National, Pointed and Pollshed. Ex. Fin " 30e 27e 25e 24c 23e 22e Perkin's Pt'd—Black. " 26c 23c 24c 20c 19c 18c Perkins' Pointed and	Malleable
Awls, Brad Sets, &c. Awls, Sewing, Commonper gross \$1'20—dis 15 % Bestper gross \$1'60—net	Sardine Scissors	Knox, 4 inch Holls	Putnam Hammer P't'd " 80c 20c 25c 25c 24c 28c	Evan's. Imitation Emerson. Hunt s. Chaoman Torrey's. Saunder's
Awis, Brad Sets, &c. Awis, Sewing, Common	Double Waterproof, 1-4s, \$1.30; 1-10s, \$1.50c. gold Carpet Sweepers. Union	Peerless, 4-Inch Rolls	Vuican, P'V de sjued. 3 ie 280 260 260 260 260 260 260 260 260 260 26	Rivets.
No. 42, \$10'20; No. 33, \$12'20 dis 50 de 00 % Clark's dis 50 g Staniey's Excelsior \$13 50 dis 30&10 % Axes.	Welcome	Champion, 6 inch rolls	Perkins' and Vuican and Globe 500 ibs. dis 5 \$ Horse Shees. Burden \$\$ keg. \$\$^52\$	Non. 7 8 9
B. ood 8. per doz \$15 00 @ 16 50—dla 20 \$ D. R. Barton Tool Co. \$1 doz \$12 00 net ant 8 \$1 doz \$12 00 net	"Nos. 2 4.4%, 6, 8, 10	Peerjess, 4-Inch Rolls. 4 00 each net 1	Horse Shees	Road and Leves Se
Colines'	### ### ### ##########################	8. F. M., 45-inch Roll. 400 each net 8-inch Roll. 400 each net Crown45 in. Roll, 48-75; 6 in., 400; 8 in., 5-25 each net Domestic Fluter. 41-50 each net	Mule Shoes. ** seg. 5-#25¢ Perkins* Show. ** keg. 5-#25¢ The Boston Horse Shoe. ** per keg. \$5-#25¢ Boston Kolling Mills Hand Made. ** per keg. \$5-#25¢ Boston Kolling Mills Hand Made. ** per keg. \$5-#25¢ Boston Kolling Mills Hand Made. ** per keg. \$5-#25¢ Boston Kolling Mills Hand Made. ** per keg. \$5-#25¢ Boston Kolling Mills Hand Made. ** per keg. \$5-#25¢ Boston Horse Boston Hand Made. ** per doz \$5-\$50, dis 10-\$5 Boston Mills* per keg. \$5-#25¢ Boston Hand Picks. ** per doz \$1-\$5, dis 60-\$10-\$5 Boston Hand Picks, per doz \$1-\$5, dis 60-\$10-\$5 Boston Horse Boston Hand Picks, per doz \$1-\$5, dis 60-\$10-\$5 Boston Horse Boston Hand Picks, per doz \$1-\$5, dis 60-\$10-\$5 Boston Horse Boston Hand Picks, per doz \$1-\$5, dis 60-\$10-\$5 Boston Horse Boston Hand Picks, per doz \$1-\$5, dis 60-\$10-\$5 Boston Horse Boston Hand Picks, per doz \$1-\$5, dis 60-\$10-\$5 Boston Horse Boston Hand Picks, per doz \$1-\$5, dis 60-\$10-\$5 Boston Horse Boston Horse Boston Hand Picks, per doz \$1-\$5, dis 60-\$10-\$5 Boston Horse	Stair. American Patent Reflers. Barn Door. Novelty
Morris' \$\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Tattle Lenders net Hotchkies' Sons' net Humason, Beckley & Co.'s dis 60 % Sargent's dis 60&10 %	Celevor Hand Futter Color	National per doz \$6'50, das 10' 5. Novelty Ice Breakers per doz \$6'50, net White's Sliding Head Picks per doz \$2'25, net Duniap s Ring Picks per doz \$3'00, dis 2' 5.	Novelty
Uguerfall'8.	Chacus Engiss Coil	Reystone Fortation Forge Co.	Wood Head Picks, Sargent'sper doz \$1°85, dis 60&10 % Iron per doz \$1°85, dis 60&10 % Ice Mallets, Pick in Head per doz \$1°5 net Pick in Handle per doz \$3°00 net	Manila Tar'd Rope Tar'd Lath Yarn Hay Rope.
M. H. Jones & Co	Trace, 5%-10-2 by the cask, * pair gold 55 a 57c German Halter Chain dis 25 % gold German Coil dis 25 % gold	Fruit and Jelly Presses. Enterprise Mfg. Co	Brase W D 400 Det	Staal
Axes. per doz \$12 00 @ 14 00 net B ood's. per doz \$12 00 @ 14 00 net B ood's. per doz \$15 00 @ 16 50 dis 20 % D. R. Barton Tool Co. per doz \$15 00 @ 16 50 dis 20 % D. R. Barton Tool Co. per doz \$15 00 @ 16 50 dis 20 % D. R. Barton Tool Co. per doz \$10 00 @ 12 00 net get 14 00 cutims. per doz \$10 00 @ 12 00 net get 15 00 cutims. per doz \$10 00 @ 12 00 net get 15 00 dis 5 % H. Clark's (J.C.W. & Co.) bron'd or red. per doz \$10 00 @ 12 00 net get 15 00 @ 15 50 @ 15 50 met get 15 00 @ 1	Gaivanzed Pump Chain 9 1076 of	Enterprise MTg. Co. Fry Pan. 8. & W., new list	Kaives	Rules. Chapin's. Stanley.
Light or "Common" dis 252.0 % All other Spring Balances dis 25 % Bands.—crated new list dis 504.5 % Fron tilm he wist dis 254.5 %	White.	Marking		
Bed Keys	Chiners. D. R. Barton Tool Co. (all kinds)	"Smith's Patent. per uoz sason, as 28-10 5 Gimeiss. dis 28-10 5 Wait and Spites. per gross, \$12-20. dis 45 5 Double Cut, Shepardson's dis 20 5 Enrwell's. dis 40 5 Enrwell's. dis 40 5 Gime Pots. dis 20 5 Gime Pots. dis 20 5 Gime Pots. dis 25 5 Gim	Carriage (Jap'd 8) cents per gross) dis socio y Base—Common. nei Plush Tip. dis 10 g dis 10 g Elastic End, No. 8, dox 8:75 Door, Mingral. y dox 8:75 "Por Jap d y dox 225 "Plated y dox 625 "Plated y dox 625 "Por y dox 675 Furniture, Plain 75c gross inch, dis 10 g	Self-Heating Tailors Mrs. Potts Sand Paper. Beader & Adamson's Flint
Heils. dis 70&10 @ 75 g Hand, Light Brass. dis 70&10 @ 75 g Exxra Heavy dis 60&10 % White Motal dis 50&10 %	# Hart Mig. Co. dis 60&10 % # Hart Mig. Co. dis 60&10 % # Hart Mig. Co. dis 60&10 % # Firmers, Douglass, Extra dis 60&10 % # Firmers, Douglass, Extra dis 60&10 %	" Ives dis 25 % " Douglass' dis 25 % Gine Pets.	" Plated \$4 doz \$25 (* dis 35&5 * dis 35&5 * dis 45&2 for cash " Por \$4 doz \$6.75 for cash 45 doz \$6.75 for cash 55c gross inch, dis 10 \$5.00 for cash \$10 for cash	Beader & Adamson's Flint
Saver Chinde dis 25 8 Saver Chinde dis 25 8 Saver Chinde dis 20410 5 Globe (Cone's Patent) dis 20410 5 dis 204	White Orayons	Family, Howe's "Eureka". dis 25 % " L. F. & C.'s "Handy". dis 25 % Grind Stone Fixtures	Melting, Hart's dis 55&10 % Sargent's dis 50&10 % Sargent's dis 50&10 % Reading dis 15&10 %	New England, same list as H. B. & M. Roman Flint Sash Cord.
Helland Inght Brass	Socket Corner	Vec Pots Give Pots Giv	Morro's Patent	Common. Patent. Silver Lake, Russia Flax. White Cotton Drab Cotton.
Lever, Sargent's dis SM:10 % Taylor's Bronze or Plated Lever net Japanned Lever dis SM:10 & 10 & 20 & 20 & 20 & 20 & 20 & 20 &	"Buck Bros (Shank)\$5'25 to £ gold Clamps. Iron, Providence Tool Co.'s, Wrt. Iron	Emmet Hammer Co.'s Handled	#Etna. dis 10 & 10 % Yankee. dis 10 & 10 % De Beque dis 10 & 10 % Police Small per dox \$7.750 net	Raw Hide
Hart, Bilven & Mead Mfg. Co. dis 50&10 5 Pull. dis 50&10 5 Brook's	Classes Succession Classes C	Henry Hammonds'	Lard Presses. Draw Cut, 14 Inch	Norwich. Walker's. New England. Hammond's Window Spris Sash Weights.—Solid Sausage Stuffers or
Cow -Common Wrought dis 30&10 % Western dis 30&10 % Wastern dis 40&10 %	Clips, Axie. Norwsy or Best. dis 40 % Superior. dis 50 %	Warner & Noole's. Hang Cufts and Leg Irons. Tower's Hand Cuffs, \$4 00 per pair. Leg Irons \$6 50 per pair.	Porcelain Lined	Sash Weights.—Solid Sausage Stuffers or Miles. Stow or Perry
** Sargent's	Nerway or Best.	Haudies. Leg Irons 25 Houdies. 25 Out of Thumb Latches— 2 Nos. 0 1 2 3 4 Per dog 80'80 1'00 1'18 1'25 1'20—dis 60\c) 10 5	Lines Line	Stow or Perry # doz Draw Cut No. 4. Enterprise Mfg. Co Naw Frames
" Yaw's Genuine	Ale and Beer dis 254:10 \$ Coffee Mills. Boerd and Box. dis 25 \$ Reighton dis	Per doz \$1/80 1 (0) 1 18 1 35 1 50—div \$0&:10 \$ Roggin's Latches	Locks and Latches. Cabinet—Gavlord. dis Eagle. dis	Saws. Spear & Jackson's. Dission s Circular. " Cross Cut. Hand, Panel, Rip W Hand, Panel, Rip H W Panels Circular.
Bellows. Bucksmittle, Common. List of Sept. 15. dls 25 g Bucksmittle, Common. List of Sept. 15. dls 19 g Koulders'. dls 25 g Hand Bellows. Domestic. is dog 43-dls 29 g	Continue	Per dog \$0*80 1'00 1'18 1'35 1'20—dis 60&10 \$1 Roggin's Latches 35c. 40c. net Bronzed Iron Drup Latches per dog \$1'00 6 1'25 uet Wrougnt Chest dis 60&10c. 0 5 Surface Chest dis 60c. 0 5 Surface Chest	Langstroth & Crane, Round Key. dis 40 % Flat Key dis 33½ % Barnes & Deitz, Flat Key. dis 25 % Vale Lot Co. Flat Key. dis 26 %	Hand, Panel, Rip H. W. Peace's Circulars Mill, Gang s Cross Cut, V
Hind Fasteners. Mackrell's	The Swift dis 20 ≰ Compasses and Dividers. Benns & Call Co.'s dis 35&10 ≰ Cook's dis 15 ≰	Hammer and Hatchet	Saryent & Greenleaf, Flat Key. dis 20 % Continental dis 25 % Shepardson's Flat Key dis 35 % American Lock Mey Co dis 38 %	k. M. Boynton's Lightning One-Man, Buck Sawi
Moulders' dis 25 % in and larger \$ 8.7 c % in and larger \$ 9.8 % in a factories of the fact	Excessior.	Apple " ass'td " 6 00 dis 33/4 Socket " ass'td " 4 00 (6 40 5	Plate new list dis 35-&2 \$ Trenton Branford Norwich	Wheeler & Clemson Mfg. (
1g-cks	Bradley's dis 15 ⊕ 20 % Chas. E. Little dis 20 ‰ 25 % D. B. Barton Tool Co dis 20 % Carkscrews dis 25 %	Apple asstor 500 dis 334 Socket asstor 400 6605 File 7 asstor 400 6605 File 600 1 400 File 600 File 600 File 7 600 File 7 600 File 600 File 600 File 7 600	Traction Branford Branford Branford Constitution Branford Branford Branford List of July 1, 1876. Gla 3585 \$ Norwalk Allory, Wheeler & Co.	Livingston's Framed Wood Nos. 10: 103 Per doz \$12:00 10:00 1
Burr's	Coffee Mills	Patent Auger, Ives' 609 Patent Auger, Ives' 618 25-610 5 Douglass' 618 25-610 5 Bwan's 618 20-618 20-618 20-610 5	Dombon - Whinnin	Stilliam a Genuise
### ### ### ##########################	Crucibles.—Gautier & Co	Barn Door	Mallory, Wheeler & Co and 2 \$ for cash Wm. Wilcox & Co als 33\6 \$ American Lock Mfg. Co als 33\6 \$ Romer's dis 15 \$	Common Lever. No Nash's No 1, Hammer, Hotchkiss Bemis & Call's Aiken's Genuine Imitation
Cast tron Barrel, Shutter, &c	Curry Combas. Curry Comb Mg. Co. Hotengra, & K. ellogge, trop & Brays, old list dis 40 \$	Harness Snaps. dis 25a 10 % Jugo's dis 45 % d	"Vulcan Hardware Co	Haten Counter
Wrought Iron Flush, Stanley's dis Lok 10 S	Pinching Irons. \$\psi\$ doz 7 50—dis 20 \$\circ\$ Curry Combs. \$\psi\$ doz 7 50—dis 25 \$\circ\$ Curry Comb Mg. Co dis 25 \$\circ\$ thotcakins' & Kellogg's. Iron & Brass, old list dis 40 \$\circ\$ Fitch's (List of No. 240, \$1) \$\psi\$ doz, \$\frac{1}{2}\$ yed—dis 15 \$\circ\$ klybber. \$\psi\$ doz 10 klybber. \$\psi\$ doz 10 klybber Bros. \$\psi\$ doz 25 25 net Curriath Plass.—Silvered disss new list dis 15 \$\circ\$ curriath Plass. \$\psi\$ were disss new list dis 15 \$\circ\$ American Pocket { Cutristy Co} \$\circ\$ doz 25 \$\circ\$ American Pocket { Cutristy Co} \$\circ\$ doz 25 \$\circ\$ Am. Miler Bro.'s Cutrery Co dis 20 \$\circ\$ Am. Miler Bro.'s Cutrery Co dis 25 \$\circ\$ Naugatuck Cutlery Co dis 25 \$\ci	Hangers Swan's per set \$1 01—dis 206:10 \$ Hangers dis 65c:10 \$ Anti-Friction" No.1, \$125; No.2, \$1'50 \$ pr. dis 40 \$ Anti-Friction" No.1, \$125; No.2, \$1'50 \$ pr. dis 40 \$ Challenge dis 40 \$ Harness Shanps dis 25c:10 \$ Juan's dis 40 \$ Hotchkins dis 20 \$ Challenge dis 25c:20 \$ Challenge dis 25c:20 \$ Challenge dis 25c:20 \$ Challenge dis 25c:20 \$ Challenge dis 20c:20 \$ Challenge dis 20c:2	# American Lock Mfg. Co. ais 38½ 5 # Romer's dis 15 5 # Vulcan Hardware Co. dis 29 5 # New York Lock Co. dis 29 5 # J. H Mc Williams dis 5 6 10 5 # Barnes & Detz dis 20 5 # Miller's Patent dis 20 5 Mallets. — Hickory and Lignamyriss dis 20 5 Meat Cutter Nos. 1 Dixon's (F. 5. W J. Nos. 1 Dixon's (F. 5. W J. Nos. 1 # doz. \$14 00 \$17 00 \$19 00 \$30 00 dis 25 5 Miller Callenge Nos 1 2	" Tes. Union Platform. Turnbuil's. Brown's Fairbanks'.
Union Nut Company, old list	Cutiery. American Table 5 Meriden ≥ New list July '76, dis 25 ≤ American Pocket { Cutlery Co 5	Hacarts, - Isama Blood	\$\frac{40}{2}\$, \$\frac{14}{2}\$ 00 \$17 00 \$19 00 \$30 00 dis 25 \$\frac{1}{2}\$\$ Miles ChallengeNos 1 2 3 \$40 00 dis 25 \$\frac{1}{2}\$\$ \$\fr	Chatillon's Grocers'
Machine	Dippers.	Lathing, 123, w dox 7 50 5 00 8 50 Hunt's dis 15 % Shingling, Nos. 12 3, w dox 87 25 8 00 8 75 Claw, 12 3, w dox 7 75 8 55 0 925 Lathing, 12 3, w dox 7 50 8 25 9 00 Hund's w dox 7 50 8 25 9 00 Hund'	Miles Challenge	Scale Beams. No. 1 200 to 1200 lbs No. 2 " Berapers. Box, 1 Handle.
Hovey's, no Augers. \$315 \$470 net with Augers. 540 540 net Douglass' no Augers. 550 750 dis 40 \$ with Augers. 9700 11:00 dis 40 \$	Naugatack Cuttery Co. Gis 25 DIPPFTS	Lathing, "128. % dox 7 50 8 25 900 Hurd's 128. % dox 7 50 8 25 900 Hurd's 128. % dox 80 00 8 50 900 Claw, "128. % dox 90 00 9 50 10 00 Lathing, "128. % dox 90 00 9 50 10 00 Lathing, "128. % dox 90 00 8 50 900 Newark's Edge Tool Co."	# doz. \$27:00 \$38:00 \$42:00—dis 40:42 ≤ 5 Draw CutNos. 5 2 8 8 10 Each \$50:00 \$75.00 \$80:00 \$225:00 \$400:00—dis 20 ≤ American	Defince Box and Ship Foot. Ship (common). Ship—Providence Tool Co.
With Augers 7-30 10 to dis 30	Brass dis 25 5 Deer Springs dos \$2:00 net	Lathing, " 123, w doz 6 50 100 150 5	No	Ship—Providence Tool Co. Screw Drivers. Hart, Bliven & Mead Douglass Mfg. Co No. 1
Kellogg's, no Augers 525 6 15 and 15 5 8 vets with Augers 525 6 0 15 and 15	Johnson's "	291H1 mon's	Bianta'n	Stanley Rule & Level Co.,
130 W 18 18 18 18 18 18 18	Johnson's # dox \$3'00 net Gem (Coil) — gem (Coil) — gem (Coil) — ger doz \$3'50 dis 10 g No. 2, Medium, " per doz 250 dis 10 g No. 3, Smail, " per doz 200 Challenge (Coil) — No. 4, Smail, " per doz 200 Coppered per doz \$2'0 dis 10 g Coppered per doz \$2'0 dis 10 g Nickeled per doz 5'50 de0 7'00 Piniadelphia. 5 in. \$5'00 g Nickeled dis 10 g Nickeled dis 1	Broad, 120 4 dox 14 d0 16 00 18 00 1	Mortars and Penties. Iron	Flat H'd Iron, list Sept. 1. "7
### dis 40&5 4 Q. Backun. dis 40&5 5 Wilson Mfg. Co. dis 40&10 5 D pofford's Patent dis 50\$	Galvanized per GOZ 8 50 400 450 dis 10 % Nickeled per GOZ 5 50 600 700 Phitadelphia 5 in \$500; 8 in \$700 dis 15 % Barker's Concealed dis 15 %	Shingling, Nos. 1 2 3.		Flat Head Brase " Round Head Brase " Brass and Silver Capped, L. Leg or Common Coach, Ne
Noble's Patent	Drawing Knives.	Claw 123. 9 doz 7 50 8 00 8 50 Lathing 12 3. 9 doz 7 60 7 50 8 00 Underhill's 12 3. 9 doz 7 50 8 00 Underhill's Shingting, Nos. 1 2 3. 9 doz 7 25 8 00 8 25 Claw 12 3. 9 doz 7 25 8 00 9 95	Uller va. Miller's Zinc, Brass and Copper	Coach. Patent Gimlet Point Bed
Description	Hart Mfg. Co., No. 1	Lathing. 1 2 3	Prior's Patent or "Paragon" dis 40 % Ox Bulls dis 60&10 \$ Pencils dis 60&10 \$ Paragon dis 60 \$ Pencils dis 6	Hound Head, Iro
Humason & Beckley Mfg. Co dis 20&10 g	D. K. martou Tool Co	Claw, Nos. 128. 9 doz 9 00 9 50 10 00 Lathing, 128. 5 doz 8 00 8 50 9 00 9 Broad, 2 5 4 9 doz 11 00 13 00 14 50 16 70 18 00 19 50	** Round Gilt.	Nettlefold's Brass Bench—Iron " - Wood, Beach " Hickory Hand Hall, Sargent's " Humason Becki
D. R. Barton Tool Co	Breast, Aiken's dis 25-219	Shingling, Nos. 1 2 3	Brass Head. dis 60&10 % Corcelain Head. dus 55&10 % Lichards' Patent dis 40 & 40&10 % Judd's dis 60&10 s	Jack—Bell Bottom
Hart Mfg. Co	Ratches, Merrill'e dis 20 s Ingersoll's (old list) dis 30 s Wilstney's dis 30 s	Casw 123 # doz 7 60 8 00 8 50 Lathing 123 # doz 7 60 7 50 8 00 Underhills 123 # doz 7 60 7 50 8 00 Underhills 123 # doz 7 25 8 90 9 15 Shing'ling, Nos. 123 # doz 7 25 8 90 9 15 Claw 123 # doz 12 00 11 00 13 00 M. H. Jones & Co. 40 21 00 11 00 13 00 M. H. Jones & Co. 40 21 00 11 00 13 00 M. H. Jones & Co. 40 21 00 11 00 13 00 M. H. Jones & Co. 40 21 00 11 00 13 00 M. H. Jones & Co. 40 21 00 11 00 13 00 M. H. Jones & Co. 40 21 00 11 00 13 00 M. H. Jones & Co. 40 21 00 11 00 13 00 M. H. Jones & Co. 40 21 00 11 00 10 00 M. H. Jones & Co. 50 9 00 9 00 9 00 9 00 Lathing, 123 50 00 8 00 8 50 9 10 00 Lathing, 123 50 00 8 00 8 00 9 00 9 00 M. M. Jones & Co. 50 00 10 00 M. M. Jones & Co. 50 00 10 00 M. M. Jones & Co. 50 00 10 00 M. H. Jones & Co. 5	Planes and Plane Irens. First Quality	Cast German Grai
			·	

	1
Blood's Excelsior and Granger # dos 11 00 m Young America 10 50 from list. 10	METALS.
Wadaworth's Grass dis 30 % Bush dis 20 %	
Shears and Scissors	HON.—DUTY Bars, 1 to 1% cents per lb., Sheet, Band Hoop and Scroll, 1% to 1% cents per lb. Provided, tha
Cast Steel	HON.—DUTY Bars, 1 to 1% cents per lb Sheet, Band Hoop and Scroll, 1% to 1% cents per lb. Provided, tha none of the above from shall pay a less rate of dut than 35 per cent. Pig. 87 per ton; Pollshed Sheets, cents per lb Wrought Scrap, 85 per ton. Cast Scrat 86 per ton. Railroad, 70 cents per 160 lbs. Boiler an Plate, 1% cents per lb.
" Scissors	\$6 per ton. Railroad, 70 cents per 100 lbs. Boiler an Plate. 1% cents per lb.
Cast Steel. dis 7&4:10 Cast Irou dis 40 × Seymour's Straight Trimmers dis 60 × 10 × 10 × 10 × 10 × 10 × 10 × 10 ×	Pig Tros—AMERICAN. tounder No. 1. ton, \$22 00 Founder No. 2. 20 00 Giray Forge. 19 00 @ 20 0
Sliding Door, M. W. & Co. Inst	Gray Forge 19 00 @ 20 @
** Hatfield'sdis 50&2 % **Russell's Anti-Friction	Cothess. Scoros. 28 60 @ 29 0 Glengarnock 27 00 Kglinton. Scoros. 19 00 @ 20 0
Sargent's List	Reginton
Shovels and Spades. Ames dis 25 % Rowland's dis 25 %	Am. Reaned, at mill
Share Clip 25	American, at works, currency F ton 39 00 & 42 0 Old Rais 21 50 @ 22 0
Dunning a Shovels and Scoopsdis 2027% %	wrought scrap, from yard " 27 00 @ 28 0
Shove is and Tongs.	Common fron. \(\) to \(\) in, round and square \(\) \(\) to \(\) in, x \(\) to \(\) in. \(\)
Slates. Square Frames, Round Cornered, by casedis 70 % Less than a casedis 65&10 %	to 6 in, x % to 1 in 1022
Spokes.	1 to 6 in. x % to 1 in
North Carolina Handle Co	Stock of round and square
Iron	wedish iron. Ordinary sizes
North Carolina Handle Co. dis 20 % spocke Shat ves. Defiance Metallic. new list dis 25 % fron. dis 35 % live Wood. dis 30 % Bailey's. dis 25 % live Spoke Trimmers. per doz \$10:00 dis 40 % Stearn's. per doz \$10:00 dis 40 % Stearn's. per doz \$40:00 dis 40 % Stearn's. per doz \$40:00 dis 40 % Stearn's. per doz \$40:00 dis 40 % Douglass' per doz \$9:00 dis 20 & 10 % Douglass' per doz \$9:00 dis 20 & 10 %	Plow size
Bonney, Stearn's	Nos. 10 to 20
Douglass'per doz \$9'00 dis 20&10 %	Nos. 10 to 20
Tinned from dis 30% By the case	2) to 26,
Britanniadis 55 @ 60 % Boardman's, new listdis 55 %	Gilvanized, 14 to &, prime, # \$ 8%c; 2d quanty # \$ 7%
Sogers & Bro. A	25 to 96 95/c 4 85/c 4 85/c 95/c 95/c
Holmes, Booth & Haydens	Patent Planished
Tin (P. S. & W.)— Ton (P. S. & W.)— Tona (P. S. & W.)— Tona (P. S. & W.)—	e Stained. No. 1. "125c telegram. One piece Corrugated Sheet from Elbows.
Douglass	One piece Corrugated Sheet Iron Elbows. OHABOOAL IRON.
Stocks and Dies	\$2.50 3.50 4.50 5.25 6.50 per doz
Hindostan Stone P n 6c Axe Stone n n 8c dis 20&10 %	\$2.56 3.50 4.50 5.55 6.50 per doz
Stocks and Dies	1½ 5 5½ 6 7 tnch. 55'00 7'00 9'30 12'00 14'00 per doz
" Slips	(COPPER - Doir. Pig. Bar and Ingot, 5c.; old copper 4 cents # \$; Maintractured (including all articles o which copper is a component of chief value) 45 \$ a.
Arkansas Stone	which copper is a component of chief value) 45 % a valorem. American Ingot
Steve Pellsh.	American Ingot
Square Folish	WHEATHING, BRAZIERS COPPER, BOLTS, 40. Braziers Copper, ordinary sizes, over 16 oz., per
Siding Sun	Hraziers Copper, ordinary elzes, over 16 oz., per square 100. Braziers Copper, ordinary sizes, 16 oz. and over 12 oz., per square foot. Hraziers Copper, 12 oz. per square foot. Sc. Circles less than b4 inch in diameter. Sc. Circles 6 dinch diameter and over. Sec.
rondis 50 %; full cases, dis 50&10 % Nickel Platedaid \$2 50 @ \$4 00 % doz net	Braziers'Copper, 12 oz. per square foot
try Squares and 1 Bevels	Circles, 84 inch diameter and over
No. 2 dis 45 % Improved. Nos. 1 & 2 dis 30 %	Circles, 84 inc. diameter and over
Tacks, Brass, &c.—List of January 1, 1876. Tacks, Half Weight, American	Polt Copper
Full Sweden	No Copper is Sheathing except 14x48 nches, and not to exceed 34 oz. to the square foot. Sheathing Copper, tinned on one side, by the
Full dis 3wed dis 10 % dis 10 % dis 10 % carpet, Am. and swedes dis 10 % for cash Leature Head dis 10 % for cash Copper. P b 45c. dis	case
thee Natis— 4-8ths and longer, 9c.; 3%-8ths, 9%c. 5 5, dis 10 % Frunk, Clout and Finishing Natis—	O'NEILL'S PATENT PLANISHED COPPER. 14x48.
1	14 and 16 oz. and heavier
Tap Herers.	12 03. and 16 05. and heavier
ves' Tap Borers	(And all sizes not over 20 inches wide.)
10mmor and Hag	18 and 16 oz. and heavier
Tea Trays. American Tea Tray Codis 15 %	Brown & Sharp's Gauge the Standard except for Pin
Thermometers The California The Ca	BEASS MANUPACTURERS' PRICE LIST.
Tobacco Cutters, B 18c., dis 10 %	October 27th, 1875. Net cash prices for Roll and Sheet Brass, Wire, &c., for quantities of 130 pounds and over at one time. For
Enterprise Mig. Co. (Champion)	quantities of 130 pounds and over at one time. For less than 100 pounds, three cents additional.
ashua Lork Co.'sper doz \$18 00—dia 50 % Tinners' Tools and Machines.	All Nos. to No. 28, and widths 14 in. and under276
Tinners' Tools and Machines. \$5, & W	All Nos. to No. 28, and widths 14 in. and under
Peck, stow & Wilcox	
fouse, Wood Choker	All Brass thinner than No. 38 is Platers' Brass. at45c Sheets 24x48 in. and all sheets cut to particular sizes and lengths
Nut Co.)	and lengths
Blake's Patent	and conc.ns
Troweis. dis 10 g	** ** ** ** 30 ** 30, ** 43, ** 43, ** 40, ** 40, ** 49,
Trowels.	LOW BRASS.
ose's Brick	Four cents * * more than High Brass. Gilding Metal 7c, * more than High Brass. 1 Bars
	Gilding Metal 7c, # 5 more than High Brass. In Bars
Ventilators (Window),	FOR SLITTING. Metal in width 2 in. to 16 in. to No. 30, inclusive, 1c. ner
Viscon. Olid Box, Trenton49 to 160 lbs., 16c.: 160 and over, 20c	B. advance. Metal, in width 2 in. to 1 in., thinner than No. 30, 2c. per
	metal, in width 1 in. to 1/4 thinner than No. 30, 3c. per madvance.
araliel, Parker's	Metal, in width 1/4 in. to 1/4, to No. 30, 2c. per 2b. advance. Metal, in width 1/4 in. to 1/4 thinner than No. 30, 5c. per 2b.
** Trenton	Metal, in width % in. to % timmer than No. 30, 50. per s. advance. Metal, ¼ in. in width and less, 10c. per ib. advance
Merrili's dis 15 %	GERMAN SILVER MARKET METAL AND WIRE Market Metal. Wire.
* Stevens' dis 25 \$ * Simpson's Adjustable dis 20 \$	4 per cent., 12 in., to No. 26
w Filers, Bonney's per doz \$20 00 dis 25 % Stea.n s per doz \$20 00 dis 25 % Hopkins'	60 116 117 117 117 117 117 117 117 117 117
Wheel Barraws. anal (Pugeley & Chapman)new list dia 30 %	20 1-20 German Silver Sheets over 12 in. wide, and weighing more than 16 38s, \$2 per 3s., net. Advance 2c. for each additional is., in width above 12
Wheel Barrows. anai (Puguley & Chapman) new list dia 30 s oai, Garden and Stone (Puguley & Chapman) dis 30 s acob's Pat. Self-Olling R. R. and Canai	in., and 2c. per m. on each No. thinner than Nos. 26 to 3c
evised list dis 604-10 %	inclusive.
rass and CopperList of Oct. 27, 1875, net right and AnnealedNos. 0 & 18 dts 50 & 52 \(\) \(\)	All German Silver thinner than No. 30 is Flaters' as Sc. per 8. additional. German Silver Scrap one-third less than net price of 12 in. Market Metal. German Silver Turnings, Filings and Chips, half the price of Scrap.
oppered	Chips, half the price of Scrap. BBASS AND COPPER WIRE.
Wire- rass and Copper . List of Oct. 27, 1875, net right and Annealed. Nos. 0 & 18 dis 50 & 52 4 5 19 6 28 dis 50 6 57 4 5 27 6 38 dis 57 6 60 57 4 6 10 6 18 dis 50 6 47 4 5 10 10 28 dis 10 6 6 77 4 6 6 5 10 28 dis 10 6 6 7 4 6 6 6 7 6 6 6 7 6 6 6 7 6 7 6 6 6 7 6 7 6 6 6 7 6 7 6 6 6 7 6 7 6 6 6 7	High Brans, Low Brass, Con'r.
nned	Nos. 21, 22, 23
aivanizeo Telegraph, Nos. 8 and 9 b b c aivanized Telegraph. Nos. 10 and 11 b b luc	Brass Rods, No. 8 and larger 0.36 0.46 0.46 Wire straightened and cut, smaller than No. 8
nnealed Fence. Nos. 8 and 9	
mned	Spring Wire, 2 cts. per lb. advance.
idd's Picture Wire	High Brass. Low Brass. Cop'r.
merican Adjustable dis #5 New List, May 1, 76dis #5 #1	No. 26. 041 045 051 No. 27. 044 048 054 No. 23. 046 050 056
Diagonal	No. 29. 0.46 0.50 0.56 No. 29. 0.48 0.52 0.58 No. 30. 0.50 0.54 0.62
Pattern (Wrought)dis 50&10 % (Malleable)dis 70&5 %	No. 31. 0.52 0.56 0.66 No. 32. 0.56 0.60 0.71 No. 33. 0.60 0.64 0.81
amond Hardware Co	No. 38
oft's Pattern	No. S6. 0-78 0-82 1-15 No. S7. 0-98 0-98 1-28 No. 37. 1-28 1-58
mis & Cail's Patent Combination	Ten cents perp ound extra for Spooling.
ben's Pocket (Bright) per dox \$1000-dis 50&10 €	Plain to No. 20 inclusive, above 14 in. to 3 in \$ 44 " above 3 in
Wringers. Less than 2 doz 2 doz jots	Nos. 21, 22, 23, two cents advance on List for each Number. Nos. 24, 25, 26, four cents advance on List for each
Wringers Less than 2 doz 3 dox iots ovidence, with Cog Wheeis \$72.00 susehold, without " 60.00 55.00	Nos. 24, 25, 26, four cents advance on List for each Number. Above No. 36, special rates.
Wringers Less than 2 doz 2 doz 1ots tots 2 doz 1ots tots 2 doz 1ots 2 doz 1ot	Above No. 38, abeciai rates.
With a core Less than 2 dox 3 dox lots to the core of	Above No. 36, special rates. Plain & inch. 110
Wringers. 1.ess than 2 dos 50ts for ovidence, with Cog Wheels	Plain ¼ inch
Wringers Less than 1 dox 5 to 1 dox 10 to	Plain ¼ inch
Wringers Less than 2 dot 2 dots lots of the property of the pr	Plain ¼ inch
ouerind, without 670 5800 10 10 10 10 10 10 10 10 10 10 10 10 1	Plain \(\) inch

_		THE IRON AGE	<u> </u>
50 101.		Plain. 28 Fancy 31	Sie
80 % 30 %	HONDUTY Bars, I to 1% cents per lb., Sheet, Band, Hoop and Scroil, 1% to 1% cents per lb. Provided, that none of the above Iron shall pay a less rate of duty	Scotch and Extra Patterns	Un
10 % 10 % net 3-75	cents per lb.; Wrought Scrap, \$8 per ton: Cast Scrap, \$6 per ton. Railroad, 70 cents per 100 lbs. Boiler and Plate, 1% cents per lb.	4 Per cent	Wei
2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	1 (FRV FORGE	MISCRLLANEOUS.	Wh
2 %	Codness	" under 500	Yel
25 % 25 % 25 %	Am. Renned, at infil	Gliding, 20 cents. Turnings, Filings and Chips, half the price of Scrap.	
2 %	Wrought Scrap, from yard 27 00 @ 28 00	date, will be filled at the rate herein stated, Terms—Net cash. No discount allowed. Interest to be added after thirty days.	Lin Wh Spe
10 %	% to 2 in. round and square 1 to 6 in. x % to 1 in 2 ™ № 2-26	LEAD-DUTT: Pig \$4 per 100 ibs.; old Lead, 1½ cent per 10.: Pipe and Sheet, 2½ cents per 1b. Spanish	Sea
00 % 05 % 10 % 10 %	Rods—% and 11-16 round and square	ANTIMONY Pig \$4 per 100 lbs.; old Lead, 1% cent	Net Nat
10 % 10 %	Sheet Iron.	AT IN IT	Chi
0%	21 to 26	SOLDER	Flo Fre Glu Gla
5% 5% 5% 5%	10%c 936c 936c 936c 91%c 10 c 936c 91%c 91%c 91%c 91%c 91%c 91%c 91%c 91%	Scription, shail 0 classed as	H
0%	OHABOOAL TRON. \$ 5 54 6 7 Inch. \$259 350 450 525 650 per doz.	Sheet	
0% net net net net	11/4 5 5 5 1/4 6 7 Inch. 15/00 7 00 9/30 12/00 14/00 per doz. 19 PPER - DUIT - Pig, Bar and Ingot, 5c.; old copper, 4 cents # 0.; Maintactured (including all articles of which copper is a component of chief value) 45 \$40	Tool.	bes
0 % 00 net 5 %	American Ingot	Regitab Steel, - payable in gold, net.	
0 % 0 %	Braziers Copper, ordinary eizes, over 16 oz., per square 100	Best Double Shear	
0% 0% 0% 0%	Circles less than \$4 inch in diameter	Reg Street	
UK	No Copper is Sheathing except 14x48 nches, and not to	" Taper 3 and 314 inch " 18c	
sh	Sheathing Copper, tinned on one side, by the case		
0%		Manufactures of, not enumerated, 35 per cent. ad val. Bars, Blockand Puss, free. Banca, subject to duty of 10 per cent. Banca. ** n 25c., currency Stratts	
0 % N	(4 and 16 oz. and heavier	Banca. \$ n 25c, currency Straits. \$ n 25c, currency English. \$ n 5 2cc, currency TIN PLATES, CURRENCY PRICES. 1 C 10214, Prime Charcom. \$ 25 68 550	
0 %	14 and 16 oz. and heavier	Course, Frime Charcoat. \$-25 \(e \) \$-50 \(\) \$-850 \(\) \$-12 \(\) \$-	-
0%	Brown & Sharp's Gauge the Standard except for Fine Wire. BEASS MANUPACTURERS' PRICE LIST. October 27th, 1875.	Hose Hate.	9
0%	Net cash prices for Roll and Sheet Brass, Wire, &c., for quantities of 1.0 pounds and over at one time. For less than 100 pounds, three cents additional.	I C 10x14. Best. 3d Quality. Ordinary. 1 C 10x14. \$400 775 700 a 725 1 C 12x12. 859 825 725 a 775 1 C 14x20. 875 825 725 a 775 TERMY PLATE. Prime Char. 2d qual. Coke.	J
5%	Ail Nos. to No. 28, and widths 14 in. and under	1 6 14x20. 8735 923 750 or 13 TERNY PLATE. Prime Char. 2d qual. Coke. 1 X 14x20. 973 125 675 6700 1 X 20x28. 1575 1475 615 25 1425 614 75 1 X 20x28. 20 25 1 C 20x28. 20 25 1 C 20x280. 8750 1475 615 25 1425 614 75 1 C 20x280. 8750 1475 615 25 1425 614 75 1 C 20x280. 8750 1475 615 25 1475 615 25	,
et et et	Sheets 24x48 in. and all sheets cut to particular sizes and lengths	Z.I.N.C DUTY: Pig or Block, \$1 50 per 100 lbs. Sheet 2\(\) \(
et et	Ciusive. Ali Brass thinner than No. 38 is Platers' Brass. at. 45c Sheets 24x8 in. and all sheets cut to particular sizes and lengths. Sheets 24x8 in. and all sheets cut to particular sizes and lengths. Sheets with the sheet s	Paper Stock, Old Metals, & c.	
37	LOW BRASS. Four cents * * more than High Brass. Gilding Metal 7c, * more than High Brass.	(Dealers' Selling Price.)	-
X X	Four cents ** b more than High Brass. Gilding Metal 7c, ** b more than High Brass. In Bars	White itnen rags. No. 1 5% 6 3½ 11 No. 2 45 6 Colored 25 6	
00 0e %	metal, in width 2 in. to 16 in., thinner than No. 30, 2c. per m. advance. Metal, in width 2 in. to 16 in., thinner than No. 30, 2c. per m. advance. Metal, in width 1 in. to 1/4 thinner than No. 30, 3c. per m.	214 @ 35; 35; 36;	R
AMMAD	advance. Metal, in width 1/4 in. to 1/4, to No. 30, 2c. per B. advance. Metal, in width 1/4 in. to 1/4 thinner than No. 30, 5c. per B. advance.	Waste paper and scraps 1 Rope cuttings 1% Kentucky Baie rope 4 Makum junk, No. 1 5% Moskum junk, No. 1 5% Moskum junk, No. 1 5%	
HHMMHH	Metal, % in. in width and less, 10c. per lb. advance GERMAN SILVER MAKEET NETAL AND WIRE 4 per cent., 12 in., to No.26	Grass rope. 3% Tarred Shaking. 2 White Couar Cuttings, ali paper. 7 musilu lined. 5 6	NO:
事有为冗化	4 per cent., 12 in., 10 Ao. 30. 30. 30. 30. 30. 30. 30. 30. 30. 30	" Envelope " 7 69 Hard White Shavings, No. 1 65 66 Soft No. 1 66 66 White Shavings, No. 2 55 66	
MMM	German Silver Sheets over 12 in. wide, and weighing more than 16 9s., \$2 per 5., net. Advance 2c. for each additional in., in width above 12 in. and 2c. per 5. on each No. thinner than Nos. 26 to 36 inclusive.	Imperfections, No. 2, best folded sheets. 5 6 1, Heavy Stock 44 6 8ook Stock, Mixed. 35 6 8 7 No. 2, light. 24 6 25	N
S et %	inclusive. All German Silver thinner than No. 36 is Platers' at 50c, per B. additional. German Silver Scrap one-third less than net price of 12 In. Market Metal. German Silver Turnings, Filings and	Prints. 11% @ 2 Pure Manilas Bogus Manilas and Hardwares 12% Commons. 1 @ 15,	
* * * * * * * * * * * * * * * * * * * *	Chips, half the price of Scrap. BRASS AND COPPER WIRE. Glid g and High Brass. Low Brass. Copp. Nos. 0 to 30	Canvas linen	9
* * * ic ic	Nos. 0 to 20	Copper	
6 % 6 d	smaller than No. 5	Heavy Composition 13½ 13	1
A SE	FINE WIRE, BY THE OLD ENGLISH FINE WIRE GALOR. Glid'g and High Brass. Low Brass. Copr. No. 25	Old lead, solid. 6	
***		Stove plate per ton \$700 Burnt Iron per ton \$700	
	NO. 33	Paints, Oils, etc.	
200	No. 37	Palets	-
8	Plain to No. 20 inclusive, above % in. to 3 in \$ '44 " above 3 in 50 No. 21, 22, 23, two cents advance on List for each	Black Paint, in oil	E

"Chinese dry.
"Chinese dry.
"Utamarine.
Brown, Boanish.
"Yan Dyke.
Carmine, 40.
Gireen, Chrome.
"Parts.
"In oil.
"In oil.
"In oil.
"The Charles of the Charl

| 150
| Regs, Sc.; asst'd cans, 11
| Sc.; ass

.asst'd cans, lic; kegs, 8 %c

AGI	
28 31 31 34 34 34 34 34 34 34 34 34 34 34 34 34	Sienna .american, Raw
ice of Scrap. on or after this ted., on or after this ted., on or after this ted., on of the second	Bolled 56 Whale, Crude 56 Bleached Winter 56 Winter unbleached 5 Seal, Extra Reined Lard, Pure Winter Cotton Seed, Crude 5 Winter winter 6 Seal, Extra Reined 5 Lard, Pure Winter 7 Borting 6 Seal, Extra Reined 6 Lard, Pure Winter 7 Winter Winter 7 Winter Yellow 7 Winter 7 Wateria Yellow 7 Wateri
1	Hardware & Iron N Manufacturer BUFFALO FOR These Natis are superior, being made with new sheat brands of Norwny Iron.
" 15c, " 16c " 18ac " 18ac " 18ac " 18ac " 19ac " 17ac " 19ac " 17ac " 11ac " 10ac " 17ac " 11ac " 11ac " 12ac " 1	5
CRb	STOVE BOARDS
7:00 @ 7:25 7:00 @ 7:25 7:50 @ 7:75 7:25 @ 7:75	STUVE DUANDA
Coke. 675 @ 700 1425 @ 1475	
Ga 35/2 55/4 Ga 45/2 45/4 Ga 55/2 25/4 Ga 55/2 31/4 Ga 25/2 31/4 Ga 25/2 31/4 Ga 35/2 31/4 Ga 35	ROUND, SQU Three Shapes, These Stove Boards being made of three diff NOT TAKE FIRE, or allow carpets and floo zine and wood frequently do. Address the manu SIDNEY SHEPAPE
4 66 4% 5 66 4% 4% 66 256 2% 66 256 1.5 66 2 1.5 66 14 2.6 66 14 2.6 66 14 2.6 66 14	New Model
13% 6 6% 12 6 6%	

Sienna American, Raw	Gum, Copal. Damar Damar Damar Bellac, English. dark. Litnarge. Carren Funice Stone, selected Lump Patty in bladders. in rulk. Rotton Stone, soft, English. Spirits Turpentine. Whiting, deanish. French Wining.				
	Single 1				
Zinc White, American No. 1 dry	812.E8. 6 x 8 to 10 x 15. 11 x 14 to 16 x 24. 18 x 22 to 20 x 30. 15 x 36 to 24 x 30. 26 x 28 to 24 x 36.	9:50 10:75 12:25 18:00	\$ 6:75 7:73 9:75 10:75	\$ 6-25 7-25 9-75 9-00 9-75	5:75 6:50 7:75
Linseed Raw	26 x 36 to 26 x 44. 28 x 46 to 30 x 50. 30 x 5! to 30 x 54. 30 x 56 to 54 x : 6. 34 x 55 to 34 x 60. 96 x 60 to 40 x 60.	14:50 15:00 16:00 17:25 18:25 20:75	18°25 14°00 14°50 15°50 17°25 18°75	10:75 11:25 12:00 13:50 15:00 17:25	
Seal, Extra Retined	Double'	Int.	2d.	i ād.	4th
Lard, Pure Winter 1-15 1	6 x 8 to 10 x 15. 11 x 14 to 16 x 24. 13 x 22 to 20 x 20. 15 x 25 to 24 x 90. 26 x 28 to 24 x 90. 26 x 28 to 24 x 90. 30 x 26 to 24 x 90. 30 x 25 to 30 x 50. 30 x 25 to 30 x 50. 30 x 55 to 54 x 56. 34 x 56 to 53 x 60. 35 x 56 to 54 x 56.	18-75 17-25 19-75 21-00 23-25 24-00 25-76 27-75 29-25 88-25	#11:00 12:50 15:75 17:25 18:50 21:25 22:50 23:45 25:40 27:75 30:00	\$10:00 11:75 14:00 14:50 15:75 17:25 18:00 19:25 21:75 24:10 27:75	8 9:25 10:54
Block Street, An'n. ass't cans, 104c, kegs % Dryer, Fateut, An'n. ass't cans, 104c, kegs % Flocks English IIc.; % Frostinge. Frostinge. Glue, White Stephen. Sheet. Glazters' Points, Zinc 92	Sizes above 40 x 60—x10 (f) p toches. An additional 10 per cent, w more than 40 inches wide, leagth, and not making more be charged in the 84 united in Discount 50&15 \$.	All size	charged es abov	for ever	Glass
PRATTI Hardware & Iron Men Manufacturers of the	chants, Buf	fal			Y.

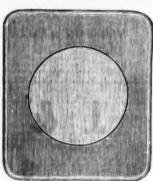
GED HORSE NAILS.

aproved machinery and actually hammered from the very



Patent OR PLATFORMS.





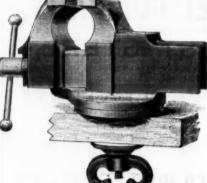
ARE, OBLONG.

Twenty-Six Sizes.

ferent materials, all non-conductors of heat, WILL ors to burn, as those constructed of only one thickness of stacturers.

D & CO., Buffalo, N. Y.

Swivel



The advantage claimed for this Vise over the ordinary patterns is in the case with which it is adjusted to whatever angle may be required.

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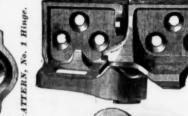
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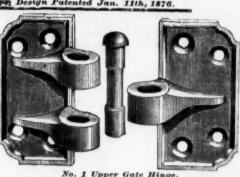
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Mattocks,—Long and Short Cutter.
Western Pattern.
Pennsylvania Pattern.

Ment Cutters.-Dixon's...

| Pennsylvania | Penn

Auburn Tool Co., " Bench

ncoin s nders, Frary & Clark's Petroleum... ylor's Petroleum Faucets... nes Liquor Cocks

_		_
-	Boynton Champion	The won
1	Back Strap	er lat
	Sad Irons.—Richmond (polished face)per 1b, 3%c Richmond (polished face) by the cask 8 B	on wl eet en %
		tovilev lev
	United States and others in Combination	at.
-		tai roi 20 8c
See 51 51 51 51 51	Totry's Door	at be ser
24.54	Stanley Rule and Level Co	ne stri
· · · · · · · · · · · · · · · · · · ·	Trunk, Clout and Finishing Nails	1 1 1 Wr Cas
2000	"Malleable Bar dia 60&10 5 (Kellogz) Malleable Bar dia 65&10 5 (Tafta Pattern (Wrought Bar) dia 70 6 70&10 4 Philadelphia Too! Co. 8 Pat. Duplex dia 25 5 Improved Baxter dia 25 6	Cas Du Sin
李俊 电花属	Wire.—No. 0 to 18. (Advanced April 21th)dis 50 5 No. 19 to 26. (Advanced April 21th)dis 50 5 No. 27 to 36. (dis 55 5 Coppered v to 12. (dis 52 4 7 Tinned Broom Wire. (dis 15 os 20 2)	Ne Ne
2222	BUFFALO.	25 Pl
公田田田田	Reported by Messars, Sidney Shepard & Co.	W
5 25	Augers—Snell Mfg. Co	W .
8	Cis 25 C	New
ie %	Sells, Cow—1 aw 6 Genuine	
55	Bolts—Stove. dis 35 % Brick—Bath (box of 2 doz) Best English #125 Can Oveners—Sprague's dis 55& to \$	
se ld	Cases—Parior Coal Hod. dis 15 % Chalk—White, Carpenter s dis 27 gross, 57c Red, Carpenter's @fac	
n. op	Chisels—Firmer Socket. dis 70 % Framing Socket dis 20 % Corner Socket Chisels dis 70 %	5c
0 %	Slick's Carpenters' dis 70 % Castlogs—Malleable dis 70 % Cocks—Globe and Bliph # 9c	In
19	Cutters—Meat, "Hales" 40 % Egg Beaters—"Dover" per doz \$1.00	81
0 %	Adjustable, Springfield	N
U %	Fluters—Geneva Hand. # doz. \$1500 Freezers, Ice Cream—" Champion"	M
00	Hinges, Gate—Shepard s. dis 10&5 s Hinges—Window Blind— dis 30&10 s	M
0 %	Buchard s and Standarddis 70&5 % Hous. Coai.—Plain, Black and Galvan'dnew list dis 15 % Funnel, Black and Galvanized	SD
6 2	Falley and relinet. dis 15 % sad frons. dis 15 % Settles—Brass. 33-45	P
5 1	Copper, Hand Made 40c. Enameled. 40c. Knives, Drawing—Oval No. 1	88
0 9	Lazor Islade Lanterns, Tubular—with guard	F
8 15 1	Machines—Apole Faring. Machines—Boring, Snell's. Mills. Coffee—Box and Side, common. dis 25 %	1
8	Box Union and Eagle 0 0 0 0 0 0 0 0 0	1
lis	t " Pointed & Polishedadd 1c * n	1
5 5	Paint—White Lead. U. S. Gov't. #85% Pans—Dripping. # B 8% Frying # B 9c	1
1 5	0 Rivets—Iron. Black and Tinned	1
ne ne	Flat Head, Brass	1
ne	Sifters—Ash \$10'00 \$12'	1
ne	spoons, from rinned to the case distance of the case o	1
20 20 25	Plated Rogers' A No. 1	1
25	5 Scales — Buffalo Scale Works	1
	Dixon's. # gross, \$450 Palace. # gross, \$575; bulk, per # 100	1
20 84 4	Squeezers—Lemon, Porcelain. # doz., \$5:40 Tacks—Half Weight Am. Iron. dis 75&10 \$	1
85	Thermometers—Tin Case. dis 50% 10 % Tools—Tinmens'. dis 50% 10 % Vases—Palace Ccal. dis 10 %	1
	Vascs—Palace Coal. Vascs— Parallel. BuffaioOld pattern, dis. 30%; new, do.dis 20%	1
	Parallel. BuffaioOld pattern, dls. 30%; new, do.dis 20 %	
8.5	Cast Iron Hollow	
33	Tin Plates.—Add for each X. 1018 of 2 doz., \$70-0 (0x14, 10. Charcoal \$8-75 14x20 U. terne	
&5	10 Visca- Parallel, BuffaioOld pattern, dis. 30 %; new, do. dis 20 % 22 Ware—French. Tinned and Iron	3
25 25	1820.	

DETROIT.

" Lasalle

Sheets.
Babbit Metal
iron Wire—Bright and Annealed.
Coppered.
Tinned.

Tinned Broom, Nos. 20 21
Copper—Sheathing 14 @ 18 oz....

Gen. Russia, No. 1 stained.

Piumbs and Levels.	Evans Care Care and C	(Reported by Masses, Januett & Root.)
Picks	Plumbs and Levels. Adjustable	Aug. 9, 1876.
Picks	Butcher's	IX.10x14
Steetywirds	Pick«.—Philadelohianet Pittaburghnet	IC. 12x12 925 Bright Wire.
Steetywirds	Rulesdis 60&10 g	1C. 14x20 973 Copper.—
Steelywrds. American Pattern. dis 215 \$\frac{1}{2}\$ dos. \$\frac{3}{2}\$ dos. \$	Rakes Cast Steel Garden dis 49 @ 404-5 %	XX 14x20 14 75 Copper Bottoms3ic
Steelyards	Malleable Gardendis 40 @ 40&5 %	XXX. 14x20 17 25 Planished Copper- XXXX 14x20 19 75 Sheathing, 14x48 41
No. 51 M00 130 260 260 dis 50 4 dis 50 5 do . \$14.00 dis 50 5 do . \$10.00 130 100 130 100 260 30 dis 50 5 do . \$10.00 dis 50 dis 50 do . \$10.00 dis 50 do . \$10.00 dis 50 do . \$10.00 dis 50 d	Bteelyards.—American Pattern	DC. 100 Plate 8 25 Boller Size, No. 7 42 DX 10 75 "No. 842
No. 51 M00 130 260 260 dis 50 4 dis 50 5 do . \$14.00 dis 50 5 do . \$10.00 130 100 130 100 260 30 dis 50 5 do . \$10.00 dis 50 dis 50 do . \$10.00 dis 50 do . \$10.00 dis 50 do . \$10.00 dis 50 d	No 50 100 150 200 25 900	DXX. " 1825 No. 942
No. 30 100 130 200 200 do 500	English Pattern	DXXXX 100 Plate 18 25 No. 18 Am. Com 4 (
	NO 361 200 130 200 200 200	[X, 14x14
	Hart's Patterndis 50 %	10, 10x14 W 825 No. 20 Am Com
	9 dog\$14'50 17'75 21'00 26'50 81'3) 35'50	Reging Tin Best Char. W. D. WOOD'S & CO. S SHEE
An and Sharpened Clipper No. 10, 18ron e. Blade Boxed and Sharpened Flore Flor		1C. Terne, 14x20 \$ 8 25 IBOX
Clipper No. 10, 18ron c a Blade Boxed and Sharpened.	Beythes Golden Cupper, Damascus Blade, Boxed	1X. " 14x20 10 75 Nos. 15 to 20 8mooth #5
tierman " 550 @ Tot Felder, -No. 1 185 Imitation	Clipper No. 10. Bron e. Blade Boyed and	1C, Terne, 20x25 17 50 21 to 24 5
tierman " 550 @ Tot Felder, -No. 1 185 Imitation	Sharpened W doz. \$9'00	4 2 to 21 Charl. 6
terman " Folder, -No. 1 150 Imitation	Clipper No. 5, Painted Red, Boxed and	IC. 10x14 Coke \$ 850 4 25 & 26 " 6 1
tierman " 550 @ Tot Felder, -No. 1 185 Imitation	Sharpened # doz \$750	[X, 10x14, COKe, 11 00] BUSSIA.
Squares. Seed and trop new list	Cast Steel Scythas 8750 @ 8700	IC 14x20 10 00 Genuine
#queres#ies and trop dem nation of the state of the sta	Garman	Felder, -20. 1 100 Ammenton
	admaresSteel and Iron. Dem Hat	1 Mat ditteretereterete man !

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	Norway Nall Rods. 834c * D net Iron Crow Bars (in ordering please state whether "Wedge" or "Pinch" point)434c * D net Beetle Rings
	% round, bent to shape, 25c W ft. of fence. less 15 % off.
	Carriage and Tire Bolts, 75 % off net.
	Stove Bolts
	Couch and Lag Screws
l	Pat. Hot Pressed Sq. and Hex. Nuta " 7c * to off net Washers, all made from new band iron " 7c * to off net
į	Washers in lots less than one keg each size, %c ? h ex. Nuts and
	Nuts and Washers in 5 lb, boxes, 1c, 2 m ex, net prices Standard Caps, for Plows
	200 lb. boxes, 1 in. diam. 3c w m net; 14. 14 in. diam. 3c w m net; 14. 14 in. diam.
	Pat. Headed Harrow Teeth, packed in boxes %c % % ex. Skein Bolts, in bulk, in jots of 1 keg or more, % in. diam
	5c 利力 net; 9-16 in. dlam. 6c 利力 net; 火 in. dlam. 7c 利力 net. ic 和力 cxtra when less than 1 keg o each size is ordered.
	Screw Hook and Eye Hinges, % to 1 in. diam., 8c P n net; % in. diam., 9c P n net; % in. diam., 1ic P n net
	Stran & T Hinges
	Bridge and Roof Bolts
	1 to 2 in. diam. over 8 ft. long W in 3%c ne

	Wrought iron plates, punched
1	WAGON HARDWAREStandard List.
	Single Tree Iron, Wt. Hook, Malleable Ferrule. * 19c and Cilp * 10 25c Single and Double Tree Iron. Wrought Centre
	Clip, % in. Welded, with % in. Ring
	25 per cent. off Single and Double Tree Irons, Neck Yoke End Ferrules and Neck Yoke Attachments, for orders of 50 set, and 10 per cent, additional oif for quantity orders, same as other Wagon Hardware, as noted below.
	Plew Single Tree, Ironed complete, Irone all Wroughteach, 550

AA LO	ught: 1	Improve	ed End P	mplete. I	stod o	0.99	
one	side ac	ets as a	wear iro	n for whe	el to	rub	a a h
Neck 1	Yoke, I	roned co	omplete.	Iron all W	roug	tht.	веп.
exce	pt End	rerrule	s, with W	t. Iron R	ings.	e	ach.
Wago	g Rog B	trap Bo	18-				
10 in	. long b	y 7-16 at	Screw E	nd, F set	of 8 h	bolts	
1.5	44	36	44		8		
10	00	9-16	0.0		- 8	6.0	
1.6	69	9-16	4.0	41	- 8	0.0	
14	0.0	9-16	44	61	- 8	0.0	2.0
10	40	26	44	41	8	6.0	
1.4	94	26		4.0	- 8	6-6	
14	44	26	41		- 8	6.6	
	44	26	41	66	- 8	0.0	
16		26	64		- 8	66	
18							

6	made.					a acres
1	In ordering Bo	x Strap I	Bolts ple	ase giv	e dia	meter
e l	Screw End.					
īΙ	Wagon Box Rod	s. parrow	track of	neh		
2	74 44	wide tr	ack, each	bell	*****	
Ö.	Single Tree Iron					
ž l	Wronght Iron B	olster Pla	too 23/	n midde	700	
: 1	Wrought Iron B	64	rece, all	H. WILL	. S. B6	Stanzana
,	44	44	01/	66		******
ő	44	44	3.4	44		*****
	Wamen Ducke W	atchete -	379		**	*****
	Wagon Brake B	atchets, e	acn			14
6		" 1	inished v	with gu	ard, e	ach. 40
	Wrought Hamn	ier Straps	, heavy	pattern,	each.	18
		**	light	6.6	each.	12
%	" Rub I	rons, each				0
%	Stav Chain Hoo	Ks. each.				
g.	Double and Sing	gle Tree (Clips, figs	ire 1. ea	ch	
T.	66 66	86	44	2. ea	ch	9
e.	16 68	84	0.6	3, ea	ch	11
C	Pole Caps, each					
c.	Single Tree He	oles. Nos.	1 and 2			
%	Strap Bolts, R	oda sing	le Troe	Prome	Doles	Tille
79	Brake Ratcher	Manyers	on Circe	Trons.	DOING	er ria

	The residence Hammer Strain, Lub Irona, Stay Chain
	Hooks, Clips. Single Tree Hooks, and Pole Caps, in
	lots of 50 sets die 25 g
	for each order amounting to \$200 net, or over, for the
	following and the state of the or over, for the
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l	Bo'ts, Rivets, Skein Bolts, Nuts, Washers, Bevel Box
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١	count, comprised in the order.
	Awla Trace Clare No.
	Axle Tree Clips, No. 1each 34c net
	" No. 3 " 8\c net
	" No. 2. " For Far n and Lumoer Wagons,
	Shank, 9-16 in flat part 1% ineach, 7% c net
	Plow and Wagon Clevises & b sc net
	California Tire Rivets and Burrs, 5-16 10c net
	Camorina Tire bivets and Burrs, 5-16 10c net
	Warran Bar Caral Warran " Manner " 11c net
	Wakun Dux Stables, 1 % to 2 % in, to clinch 36 1000 \$10.75 not
	Bevel Box Iron, to rivet on % 1000 7:95 not
	Neek Yoke Eyes, each
	44 With & wings each To not
	King Bolts, %, 1, 1%, and 1% in. diam # B 8%c net
	Wagner Library at 1. 12, and 12, in diam F B 3%c net
	Wagon Rivets, ex. large flat, oval and steeple
	head, in. diam., i in. and longer " 736c net
	Wagon Elvets, 3-16 in. diam., 1 in. and longer * 8 %c net
	* to 1 inch long P to 1c extra
	" & Nails, in 5 % paper boxes " ic extra
	" in 25 to wood " " %c extra
	Wagner and His man North Wood " " 1/4c extra
	Wagon and Hinge Nails, pointed by hand-

King Bolts,	16. 1, 136.	and I	34 In	. diar	11	W	n	8%C
Wagon River	16. ex. la	rge fit	10 .31	al an	dister	enle	_	4/40
head, 1/4 in.	diam.	in.a	nd lo	nger			9.0	736c
Wagon Rive	ts, 3-16 f	n. dia	m., 1	in. an	d lon	ger		836C
**	% to 1	inch	long.			30	Th	ic er
64	& Nail	8, in 5	to pa	per b	охея.		8.6	te ex
		In 2	D W	boor	6.6	4	10 3	6c e:
Wagon and	Hinge N	ails, t	point	ed by	hane	1		-
14 x8 and lo	nger.	216 &	234	2 & 3	245	13/ a	nd	shor
11c 11	b.	Die 30	90 .	15c 4	t Th.	1	170	30 %
3-16x3 and	longer.	216 6	23%	2 &	236	1% a	nd	shor
12e ₩	D.	14c 3	R B.	100	de B.	1	Ne	w m
Wagon Rive	ets and	Nails.	in 1	oss I	ots th	han		- 20
one keg er	ach size						6.0	%c e:
Double Tree	Plates						44	7% C
Coupling	4						4.6	4360
Tongue	1.6						0.6	Shee

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, 1%, 2 & 2% in, wide, same pric

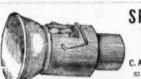
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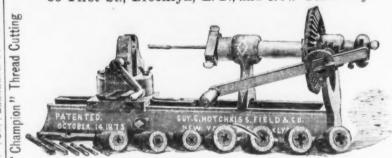
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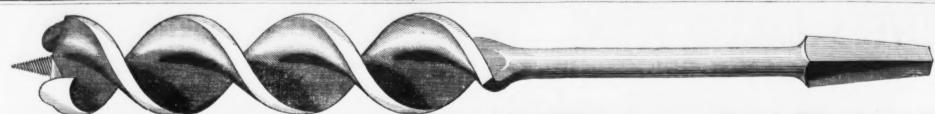
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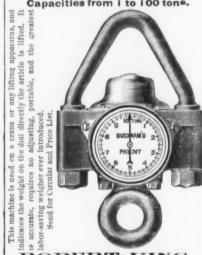
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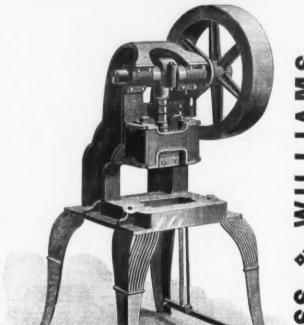


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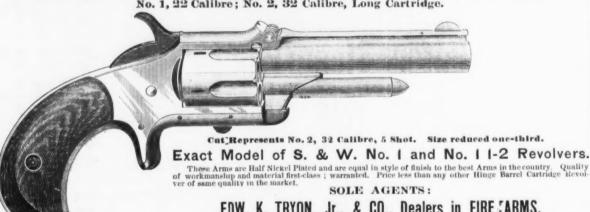
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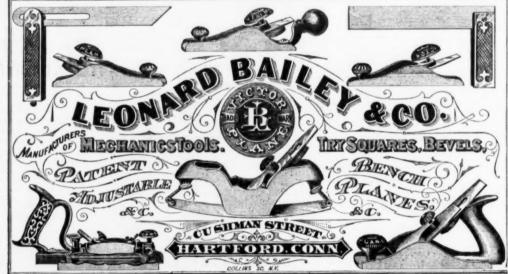
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	& Co., 72, 74 & 76 Lake St.
June 1	.1876.
Tin Piate.	14x20, IXX, Ch' Best, 14 50
10x14, 1C,Ch'i, Good.\$	9.4 - (N) F W W W 14 4- 10 (N)
10x14, 4U, ' Hest, 850	
10x14 4.X. " . 11 00	DX. " " 11 00
12x12, IC. 4 4 9 00	
12x12, 1X, " " , 11 50	
14x26 IC. " " 9 50	IX. 14x14 "
14x20, 1X, " " , 12 00 (
14x20, IC, Charcoal Rooting	r. Com
14x20, IC, "	Good
14x20, IC, "	Best 8 00
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Block Tin	
Large Pigs 34c	Bars 26c
Bmall	
Zinc sheet, 500 to 1000 ib.	Casks 956c
Loose Mheets	10170
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COPPER. DOLLOIDS	1965
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EPUBLET TERRETARS	380
BOIL	
Braziers' Sheets,-	
50x60, 6 to 7 lbs 1 10 100	30x60, 10 to 12 lbs * 34c
30x08. 8 to 9 lbs " 36	Summer, 15 to 100 lbs. ' Mig

-F. S. & Co.'s make ne 18c	Wrought Scrap Iron P top.
ne 15c 17c 17c 15c 15c 15c 17c 17c 17c 17c 17c 17c 17c 17c 17c 17	Steel
ren Smooth, Smooth Smooth	L. C. Cose 10x14 650 Rolf 8
Common. Com. Charcoal, Juniata 84c 5 c 654 84c 236 4 c 554c 64c 9 e 45c 554c 7 c 934c	Coke " 1C, 14\20, 6 00 Lend.— \\ METALS. Pig. 38
ized iron	Banca 23c Pipe 8 Straits 15 c Zinc.—Sheet. N 9 10
0 24 13c 28 10c 2 14c	English. 17 c Spelter. WB 85 German. 9 c Antimony. gold w B 16
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Wrought Table Butts and Back Flaps
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Nichots \$11: 1½, \$9.75.

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Hagers dis 41: 2

Hagers dis 41: 2

Hagers dis 45: 2

Hagers dis 45: 2

Hagers dis 45: 2

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Chambion Wood Wheel. be dog 33red Garden. re doz. 549 net Wrenches, Coes' tenume. the 55 £ Coes' Fatters. the 55 £ Coes' Fatters. the 55 £ Coes' Fatters. Wugons. White water Farm Wagons—Thimbae Skein. ... 3 in. §54 ; 35, in. §78 ; 35, in. §78 ; 15, in. §78 ; in. §78

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1X, 14x30, \$1200 | 1C, 14x30, \$1200
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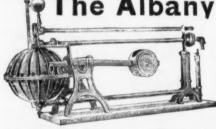


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No Charge for Boxing & Cartage

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condensation from Heating Coils, and returns the same to the Boiler whether the Coile are above or below the water level in Boiler, thus doing away with pumps and other mechanica devices for such purposes. Apply to

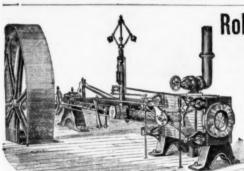
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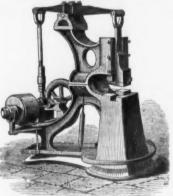
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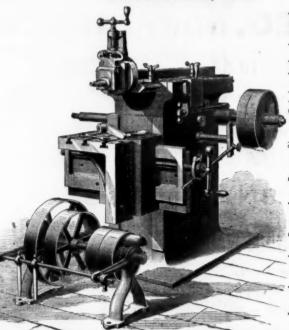
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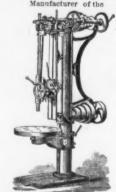
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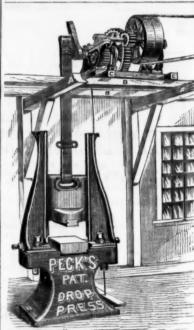
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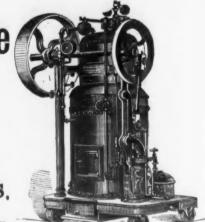
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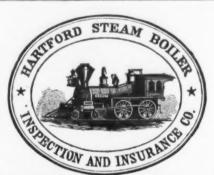
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REPORT OF JUDGES

In Department V, Group 3, at the 44th Exhibition of the

AMERICAN INSTITUTE, Held in the City of New York, Oct., 1875.

No. 318, Drawing, Drop & Punching Presses.

THE STILES & PARKER PRESS CO., Of Middletown, Conn.

The machinery exhibited by these makers is of a character that calls for special commendation. In addition to their well known punching presses, to which a new feature has been added in a press adjustable to an inclination for discharging work left above the die, there are exhibited by them a combined punch and shears, a drawing or blanking press, and a doo.

bined punch and shears, a drawing or blanking press, and a drop.

In all these there is shown the highest nuchanical culture, applied to meet every practical requirement, to avoid every practical difficulty, and to enlarge the range of application of the machines, by devices which are at once simple, elegant, and effective.

Your committee would unhesitatingly recommend for this exhibition the "Medal of Progress," but find such award debarred by the rule of the Institute, forbidding such award unless a Silver Medal has been previously awarded We, therefore, respectfully recommend the award of a Silver Medal.

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A true copy from the Report on file.
JOHN W. CHAMBERS, Sec'y.



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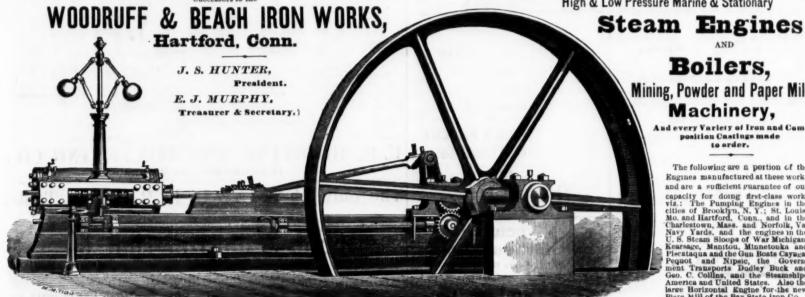
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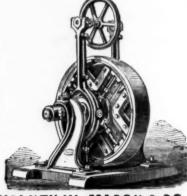
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And every Variety of Iron and Com position Castings made to order.

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SWEDISH STOCK, OIL-TEMPERED and WARRANTED.

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Universally Used in the United States,

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The immense demand for this very popular ar ticle has induced certain manufacturers to infringe our Patents. We therefore notify the trade that we will prosecu o all infringers

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